



Carl J. Drake - 1921 -

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HEMIPTERA HETEROPTERA.



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THE
HEMIPTERA HETEROPTERA
OF THE
BRITISH ISLANDS.

A DESCRIPTIVE ACCOUNT OF THE FAMILIES, GENERA, AND
SPECIES INDIGENOUS TO GREAT BRITAIN AND IRELAND,
WITH NOTES AS TO LOCALITIES, HABITATS, ETC.

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PREFACE.

THE number of Entomologists who take an interest in the British Hemiptera has considerably increased of late years, although I fear it is an order which must still be looked upon as more or less "neglected." It is hard to see why this should be, as many of our species will compare favourably in beauty and delicacy with those of any other order. This delicacy of course makes their collection rather difficult, as they must not be handled, and their antennæ and legs are very liable to get broken; but a very little care will enable the collector to bring back his specimens uninjured, and when once he has got them home and set them, I feel sure he will be amply repaid for his trouble.

On the Continent of Europe a large amount of work has been done during the past ten years or so in this order, and the labours of Drs. Puton, Reuter, Horvath and others have cleared up a great deal of the confusion that used to exist in the European list. Dr. Reuter's magnificent work, "*Hemiptera Gymnocerata Europæ*," and Dr. Puton's "*Synopsis des Hémiptères Hétéroptères de France*" should be in the hands of all Hemipterists who can afford them. I have borrowed characters frequently from both of these, as well as from Dr. Horvath's numerous papers, Messrs. Douglas and Scott's standard work, "*The British Hemiptera*," and from the various works of Fieber, Stål, Thomson, Sahlberg, Lethierry, etc.

The object of the present volume is to give short descriptions of our genera and species, accompanied by synoptical

tables, and as much information as can be gathered as to distribution and localities. I have avoided synonymy as much as possible, but have endeavoured always to refer to Messrs. Douglas and Scott's "British Hemiptera" when the names I adopt differ from those employed by them; and where I use the expression "nec D. & S.," I mean that the species here described is not the species described under that name in their work. Many of these changes of nomenclature have been made by the authors of "The British Hemiptera" themselves in the pages of the *Entomologist's Monthly Magazine*. In collecting localities I have had much assistance from Major Blathwayt, Messrs. Billups, Blatch, E. A. Butler, G. H. Carpenter, Champion, Dale, Edwards, Dr. J. W. Ellis, Rev. Canon Fowler, Rev. W. F. Johnson, Rev. T. A. Marshall, Mr. A. Piffard, and Dr. F. Buchanan White, as well as from the following local lists: Hastings and St. Leonards and its vicinity; Lincolnshire, J. E. Mason; Norfolk, J. Edwards; Devon, E. Parfitt; Reigate, J. Linnell. In nomenclature and arrangement I have followed Dr. Puton's "Catalogue des Hémiptères de la faune paléarctique," 3^{me} Edit.: Caen, 1886; but I have diverged from it in a few cases where I have found it convenient to do so.

There are probably many new species yet to be added to our list, as some parts of the country have scarcely been worked at all. I have obtained very few Welsh localities, and the West of England and Scotland, as well as most of Ireland, have had very little attention from Hemipterists. It is hoped that the present volume will be useful to the few workers we have in this order, and may induce others to take it up as a study.

EDWARD SAUNDERS.

St. Ann's, Woking,
November 9th, 1892.

DESCRIPTION OF STRUCTURAL PLATE.

- FIG. 1. Pronotum of *Corixa distincta*.
 2. " " *Falleni*.
 3. Face of *Corixa semistriata*, ♂.
 4. " " *limitata*, ♂.
 5. " " *Fabricii*, ♂.
 6. " " *venusta*, ♂.
 7. " " *fossarum*, ♂.
 8. Elytron of *Orthostira* (*Tingididæ*) (diagram).
 A. Sutural area; B. Discoidal ditto; C. Lateral ditto; D. Marginal ditto.
 9. Elytron of one of the *Capsidæ* (diagram). A. Clavus;
 B. Corium; C. Cuneus; D. Membrane; E, E. Cells of membrane.
 10. Elytron of one of the *Cimicidæ* (diagram). A. Clavus;
 B. Corium; C. Embolium; D. Cuneus;
 E. Membrane.
 11. Wing of a *Capsid*, showing hamus of cell at A.
 12. Upper side of one of the *Pentatomidæ* (diagram).
 A. Head; A¹. Central lobe of face; A². Antennæ;
 A³. Eyes (compound); A⁴. Ocelli. B. Pronotum;
 B¹. Anterior angles; B². Posterior ditto. C. Scutellum.
 D¹. Corium of Elytra; D². Clavus of ditto;
 D³. Membrane of ditto. E. Abdomen; E¹—E⁵.
 Segments of Connexivum. F¹, F², F³. Femora,
 Tibiæ, and Tarsi of legs.
 13. Underside of one of the *Pentatomidæ* (diagram).
 A. Head; A¹. Rostrum; A². Antennæ; A³. Eyes.
 B. Prosternum; B¹. Acetabulum; B². Coxæ;
 B³. Trochanter; B⁴. Femur; B⁵. Tibia; B⁶. Tarsi.
 C. Mesosternum, legs, &c., as prosternum.
 D. Metasternum, " "
 D¹. Orifice of odoriferous sac. E¹, E², &c. " Abdominal segments, the black dots being the stigmata.
 E². Showing basal process, as in *Piezodorus*.
 E⁷, E⁸. First and second genital segments.

HEMIPTERA-HETEROPTERA.

INTRODUCTION.

THE HEMIPTERA, or bugs, may be known by their haustellate mouths, incomplete metamorphoses, and four wings. In the Heteroptera the anterior pair of wings, or elytra, are of a more or less coriaceous texture, except towards the apex, which is generally membranous, the posterior pair are membranous and fold up under the elytra; both elytra and posterior wings are often undeveloped. The pronotum in the Heteroptera is very large, and produced backwards as in the Coleoptera, as is also the scutellum, except in a few genera; the membranous apices of the elytra in the developed forms overlap, so that the suture is not straight as in the Coleoptera. Developed and undeveloped specimens of the same species often occur together, and in some the developed form is exceedingly scarce; in the undeveloped forms the elytra are generally shortened, and the membrane either curtailed or entirely absent, and the posterior wings abortive; there is also in some genera an intermediate or brachypterous condition, in which the posterior wings are shortened and the membrane comparatively slightly modified; in the brachypterous and apterous forms the pronotum is less developed posteriorly, and this modification has been the cause of the erection of many new species which are now correctly referred to their developed forms. In variability of shape the

Hemiptera probably hold their own against any other order, and as a rule the specific characters can be derived from structure, and are well defined; the generic characters, on the other hand, are frequently obscure, which is especially the case in the large family Capsidæ, where the grouping of the species into genera is a labour of great difficulty. The larger or more comprehensive divisions again appear to be better defined.

The large majority of our species are vegetable feeders, existing on the juices of plants, but a few, as is well known, have a preference for animal nutriment; whilst some appear to relish either animal or vegetable juices. There are a few species in this country that appear to associate with ants, and more or less resemble them in appearance, especially when in motion; of such resemblances the most striking example we have is that between the female of *Systellonotus triguttatus* and the worker of *Lasius niger*, amongst which both sexes of the bug may occasionally be found running. Dr. Reuter has found it actually in the nest of *L. niger*, and Mr. Douglas has found it in the nest of *Formica fusca*. The species of *Pilophorus* again frequently occur in company with ants, which they certainly resemble in general appearance. The same may be said of the larva of *Alydus calcaratus*; *Piezostethus formicetorum* inhabits ants' nests, but does not resemble its host. On the Continent there are many species very closely resembling the Formicidæ, and Mr. Wroughton lately exhibited at the Entomological Society a most interesting species from India belonging to the Capsidæ, which associates with *Polyrhachis spiniger* and bears spines on the pronotum, etc., corresponding almost exactly with those on the ant.

The metamorphoses of this order of insects being imperfect, the larval and nymph states are active, and more or less resemble the imago, although in many cases the resemblance is hard to trace; as, for instance, in the larvæ of some of the Nabidæ, that of *Calocoris roseomaculatus*, or

Capsus lanarius; the ocelli, wings, and frequently the claws are not fully developed until the final state is reached; and in the Pentatomidæ the number of antennal joints is only four in the larval and five in the imaginal state; the insect is said to go through three changes of skin after it leaves the egg before it reaches the imago; after the first the larva increases in size and the rudiments of wings appear under the skin, according to Burmeister; after the second the wing pads, as Packard terms them, increase in size, and this stage is called the nymph or pupal state; after the third moult the imago appears. Packard ("Guide Study Ins." (1883), p. 518) says:—"The embryological development of such Hemiptera as have been observed corresponds very closely with that of certain Neuroptera," and he places them between the Coleoptera and Orthoptera—a position which they seem to occupy very naturally.

Fossil Hemiptera.—From Mr. Goss's papers on this subject, the Hemiptera seem to have appeared first at the close of the primary or palæozoic period; early in the Secondary or Mesozoic period they began to be abundant and widely distributed. The first known appearance of the Heteropterous Hemiptera is in the Lias; the species found there have been referred to the Genera *Cimex* and *Belostoma*; in the upper Oolite and also in the upper Eocene period they seem to have been abundant, as well as throughout the Miocene.

INTERNAL ANATOMY.

The internal anatomy of the Hemiptera, though like that of the Coleoptera in many respects, differs in several essential particulars. The food passes from the groove in the rostrum directly into the œsophagus, there being no apparent pharynx, according to Burmeister, as in the Coleoptera; the salivary ducts discharge into the œsophagus close to its origin; the salivary vessels are usually four in

number, but in *Nepa* as many as six; the œsophagus passes through the thorax as a straight tube, distending at the base of the abdomen into a "broad, bladder-shaped, generally long and often irregularly folded stomach;" this is not a sucking stomach, according to Burmeister, but is the first of several successive stomachs, and is, he says, without doubt, analogous to the crop of the Coleoptera and Orthoptera. The second stomach is "generally the narrowest and always the longest," and in function and structure seems to correspond to the proventriculus, although it has not the horny structures observable in the mandibulata; at its posterior end it is distended, in a bladder-like fashion, beyond this again follows, in many of the genera, a third stomach, whose cavity in some genera is formed by four half-cylindrical tubes; in many, however, this third stomach is wanting, but in compensation the second stomach and other following intestines are longer; the duodenum and ilium are, according to Burmeister, practically wanting in the bugs, so that the stomach opens directly into the colon, which is terminated by the apical opening of the abdomen; the urinary vessels discharge into the stomach near its posterior extremity.

The Nervous System, according to Packard, consists of the cephalic ganglia and two thoracic ganglia, of which the anterior is the smaller, which send off two main trunks to the abdomen.

The Circulatory System, as in other insects, consists of a dorsal vessel or heart, from which the blood circulates through the blood vessels by the pumping action of the contractions and dilatations of that organ.

The Respiratory System is conducted through the agency of spiracles, which are orifices in the external surface of each segment, from which the tracheæ distribute the air through the system; these spiracles may be plainly seen when on the underside of the abdominal segments, and in most of the Pentatomidæ they are black. "In *Nepa* and

Ranatra the body terminates in a long breathing tube, and the tracheary system in these two genera is very peculiar, being very largely developed; on the underside of the body there is a large air-bladder within the metathorax, leading from the spiracle, which evidently lightens the insect during its flight. In the abdomen the spiracles are only present on the third to the fifth rings; they are not, however, simple clefts in the wall of the body, but are closed by a sieve-like membrane, so that they perform the function of tracheal gills (Gerstaecker)." (Packard, "Guide Study Ent.," p. 537.)

The Reproductive System.—The male generative organs consist of the testes, the spermatic ducts, the seminal vessels, and ejaculatory duct terminating in the penis; the female organs being the ovaries, the oviduct and spermatheca and ejaculatory ducts terminating in the orifice of the vagina. The secondary sexual organs, or armature, will be considered under the head of external anatomy.

EXTERNAL ANATOMY.

The Head.—This varies considerably in form, but not so much as in the Coleoptera; the face is horizontal or slightly declivous in most of our species, but in the water-bugs and a few others it is perpendicular, or even at an acute angle to the vertex, as in *Corixa*, etc.; in shape it is generally more or less triangular looked at from above, with the eyes contiguous to or near the anterior margin of the prothorax. Notable exceptions, however, frequently occur, such as may be found in the Coreidæ, in *Limnobates*, etc., in which the eyes are far remote from the pronotum, or where the triangular shape of the head is hardly maintained, as in some of the Pentatomidæ and in the water-bugs of the genus *Corixa* *Notonecta*, etc., where the triangular face points downwards. The compound eyes are lateral and vary much in size and in shape; as a rule they are round and only slightly

prominent, occasionally they are produced, or even pedicellate, as in *Henestaris*; in the *Corixidæ*, etc., they are very large and triangular, and looked at from above occupy the whole of the sides of the head; the ocelli, when present, are two in number and often large and prominent; they are absent in many of the genera and very minute in others; in front of the eyes, on the sides of the head, are the antenniferous tubercles from which the antennæ spring; these vary in size and are sometimes on the upperside and sometimes on the underside of the head, e.g. they are hidden by the margin of the head in the *Pentatomidæ*; in the *Coreidæ*, *Tingididæ*, *Aradidæ*, etc., they are often produced laterally into a process or spine; the antennæ themselves are not very variable in form; they are generally four-jointed, but have five joints in the *Pentatomidæ* and the *Nabidæ*, six in the genus *Velis*, and as many as eight in the genus *Coranus*; whereas the number is limited to three in some of the aquatic genera. In the eight joints of the antennæ of the genus *Coranus*, one of the *Reduviidæ*, are reckoned certain very short supplementary joints which occur between the longer ones. As a rule they may be said to be filiform, but occasionally the apical joint is enlarged and frequently, especially in the *Capsidæ*, the second joint is more or less swollen, much so in *Atractotomus*, etc., and in one genus, *Heterotoma*, it is much dilated and flattened; in the *Reduviidæ* the last two joints are generally thinner than the preceding ones, and in the *Tingididæ* the third joint is abnormally long; in the *Cryptocerata* they are short and hidden under the head.

The face is composed of three lobes, the central one of which is considered by most Entomologists to be analogous to the clypeus of other orders. Messrs. Douglas and Scott, on the other hand, consider that the front of the crown, as developed in the *Capsidæ*, is the clypeus, and call the facial lobe mentioned above, the central lobe of the face; I have adopted their nomenclature as there is no difficulty in

appreciating which the central lobe is, and it seems to me open to doubt as to which may be the true clypeus; the external lobes are the genæ or cheeks; from beneath the central lobe extends the labrum which is closely adpressed over the base of the rostrum; this latter organ springs from the underside of the head, which is excavated so as to receive its first joint in repose; when the rostrum is stretched out, the cavity will be seen to be covered by a sort of muscular membrane, and to the front of this membrane the rostrum is attached; it is usually three or four jointed, and is structurally a sheath open at the apex in which the four setæ lie which are considered to represent the mandibles and maxillæ; the sides of the sheath fold over in front and almost or quite touch along a straight suture, so as completely to cover up the setæ, which can be drawn out if necessary. The palpi of the other orders seem to be unrepresented here; in repose the rostrum generally lies adpressed to the sternum and sometimes even reaches beyond the centre of the abdomen, but in some genera it is short and bent at the base as in *Salda*, *Reduvius*, etc., so that it does not lie adpressed to the underside; it can be extended by means of the basal membrano-muscular hinge.

The Thorax.—This, as in other insects, is composed of three segments, the prothorax, mesothorax and metathorax, the upper surfaces of which are termed respectively the pronotum, mesonotum and metanotum, and the under, prosternum, mesosternum and metasternum; the sides of the sternites are called the pleuræ; the pronotum throughout the family is very largely developed and extends backwards to the base of the elytra and scutellum which it frequently more or less covers; it varies very greatly in form and is often constricted in front into a collar or a callose margin; the prosternum receives the anterior pair of legs, and the position of the acetabula or sockets into which the legs articulate is of considerable value in classification; the mesonotum

only appears above in the scutellum, which is generally largely developed in this order and occasionally to the extent of covering the entire abdomen, as in the *Scutellerina*; from the sides of the mesothorax extend the anterior wings, elytra, or hemelytra, as they are variously styled, and from the mesosternum the intermediate pair of legs; the metanotum, as in the *Coleoptera*, is completely covered by the elytra, from its sides extend the posterior wings, and from the metasternum the posterior pair of legs; on each side of the metasternum is placed the sac from which is emitted the odoriferous substance which gives such a peculiar smell to so many of the species of this order; the form of the orifice of this sac affords valuable distinctive characters for some of the genera; these orifices are situated near the posterior coxæ. The thorax has consequently five pairs of appendages, the two pairs of wings and the three pairs of legs which must now be considered. The anterior wings or elytra are almost always coriaceous except at the apex which in developed specimens is membranous; in its most complex form it is composed of five divisions, corium, clavus embolium, cuneus, membrane; these are separated from each other by nerves and are generally well defined. In my description of the species I have throughout considered the elytra as closed, so that the terms anterior, lateral, posterior, etc., refer to them in this position; under these circumstances the clavus is the narrow strip of the elytra which lies at the side of the scutellum, its sides as a rule are nearly parallel; the corium is the whole of the part of the elytra lying outside this, bounded at the apex by the membrane; in the *Capsidæ*, *Cimicidæ*, etc., the externo-apical angle of the corium is separated off and is called the cuneus, the latero-basal portion of the corium is also separated off in the *Cimicidæ* and is termed the embolium. The membrane is the apical portion of the elytra, it is present in nearly all developed specimens, its nerves vary very much in arrangement; in the

earlier genera they are numerous and generally longitudinal, sometimes springing from a transverse basal nerve, but in the Capsidæ the neuration is very simple, consisting of a single well-defined nerve, which originates just beyond the inner angle of the cuneus, and encloses a cell on the membrane, its other extremity being near the outer apical angle of the cuneus, a nerve from this divides the cell into two, in some cases this divisional nerve is absent; in the Cimicidæ there is only a basal nerve which lies close to the apex of the corium; in the Tingididæ the membrane is reticulated and almost like the rest of the elytra; in the Corixidæ the membrane is almost nerveless.

The posterior wings are always membranous; the neuration varies considerably but it has not been used much for characteristic purposes; in the Capsidæ the presence or absence of the hook-like nerve which is emitted from the upper nerve of the wing cell is used for divisional purposes, but it is not constant, as in *Asciodema* some specimens have the nerve and some have not.

Of the legs the constituent parts of each are first the coxa; this is moderately sized in most of the genera, but very largely developed in the Capsidæ; second, the trochanter; a small joint between the coxa and the femur; third, the femur; those of the anterior and posterior legs are often more or less incrassated, and in the Lygæidæ the former are generally armed with a spine near the centre and often with several smaller spines near it; fourth, the tibia; these as a rule do not present any great variability of form, but the spines which they bear in some of the Capsidæ are useful in distinguishing genera apart; fifth, the tarsi; these consist of one, two, or three joints, and afford valuable generic characters; in the Corixidæ the posterior tarsi are formed for swimming, being dilated, and somewhat oar-shaped, fringed with long hairs; the anterior tarsi in the males of this family vary much in form and are useful characters in distinguishing the species apart; the apical

joint of the tarsi bears the claw or claws and the pulvilli when present.

The Abdomen.—Lacaze-Duthiers considers the abdomen of the Hemiptera to consist of eleven segments; the presence of some of these, however, is more or less theoretical, they being merely indicated by certain sclerites representing a portion only of the original segment; looking at the abdomen from beneath, the basal segment is very short, and looks almost as if it were part of the thorax; then follow five well-defined segments, and beyond these five come what are termed the genital segments; these are usually two or three in number and are much modified for generative purposes; there is a complete ovipositor observable in the females of the Capsidæ and some other groups; and in the males, throughout the Heteroptera, what are termed the genital styles, which may be found lying one on each side of the apical aperture, seem to afford good specific characters, although they have not been employed for such a purpose except where actually necessary. A curious organ occurs on the posterior margin of the upper side of the sixth abdominal segment in the Corixidæ, and was first pointed out by Dr. Buchanan White (*Ent. Mo. Mag.* x. p. 60, etc.); this "consists of a chitinous plate attached to a short pedicle and provided with rows of closely set teeth;" the plate varies in shape and in the number of teeth in the different species. Dr. White calls this organ the strigil and points out that it has no doubt some connexion with the genital organs. In the males of *Corixa* the last four segments of the abdomen are asymmetrical; in most species the asymmetry is on the right side and in a few it is on the left; "the strigil has a corresponding situation," but is not observable in all the species.

Collecting, etc.—The insects of this order, especially those belonging to the Capsidæ, are in many cases so fragile that to touch them with the fingers is to run a great risk of spoiling the specimens; the plan I have always adopted for securing

them is to use an ordinary Coleoptera bottle, with a glass tube through the cork, and to place the end of the tube directly over the creature; in an umbrella or net it is easy to secure any of the species, if they are running up the net or the sides of the umbrella, by just touching their hind legs with the under rim of the tube; they are almost sure to jump and fall backwards under such circumstances, right down the tube; of course the harder species of Pentatomidæ, Coreidæ, etc., can be handled without fear of damage, but they often leave a very unpleasant smell on the fingers. For killing purposes I always use cyanide, which I put at the bottom of the bottle, covering it well over with a thick wad of blotting-paper, and over this a cone of white paper which should touch the sides of the bottle all round, so that no insects can crawl down between it and the glass; the great thing is to keep the specimens dry, as if they get the least wetted the membrane will curl up at the end; they should be set as soon as possible after capture. I believe the best way of mounting is to gum each specimen across a narrow strip of card and then pin through the card, by this means most of the underside can be seen, and if a slight sideways cant be given to the insect, both upper and under sides can be examined with ease; of course insects set like this do not look so picturesque as when mounted on card with all the legs symmetrically stretched out, but as the *raison d'être* of our science is to know the creatures under observation, every obstacle to thorough investigation ought to be removed, and a card under the insect is a considerable obstacle, as all know who have to name neatly carded specimens of critical species; the very small species may be mounted on squares of card, but even then it is well to set them as much on their sides as possible. Each specimen should bear a locality ticket, with date of capture, etc., and a reference by a number or other sign to a register where fuller particulars of locality, etc., can be given.

There are few localities which may not be hopefully searched for Hemiptera, but the largest results may be obtained by sweeping and beating; certain species are to be found only on their particular food plant, others seem to occur indifferently on plants of various natures; for sweeping purposes a strong brown holland bag-net on a landing-net ring, screwed into the end of a thick oak stick is about the most useful implement, and for beating, an umbrella covered with brown holland; marshy localities are good for Saldidæ, etc., which run or jump on the mud, and *Sphagnum* in some districts produces good species; moss, rubbish, dead leaves and all such localities have their specialities and a few occur under bark; there are also many water species, and one genus, *Aëpophilus*, occurs on the sea shore below high-water mark, so that practically no locality should be passed over. Oaks, ashes, willows, birches and firs are perhaps the most productive trees, although there are few that do not yield something to the collector; the most productive months are July, August and September, but many of the Hemiptera hibernate, so that they may be sought for all the year round with more or less success.

TABLE OF FAMILIES.

(24)	1. Antennæ free not hidden	GYMNOCERATA.
(21)	2. Abdomen not clothed beneath with a silvery velvety pubescence—species not aquatic	
(4)	3. Scutellum reaching at least to the base of the membrane	PENTATOMIDÆ.
(3)	4. Scutellum not reaching to the base of the membrane *	
(18)	5. Mesopleuræ and metapleuræ composed of one piece only, elytra without a cuneus	
(15)	6. Tarsi 3-jointed	
(12)	7. Rostrum not bent at the base, lying in repose against the under surface of the head	

* Except in Aradidæ.

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|------|-----|---|---------------|
| (11) | 8. | Antennæ inserted above a line drawn from the centre of the eye to the apex of the face | |
| (10) | 9. | Legs not very long and slender, femora not clavate at the apex | COREIDÆ. |
| (9) | 10. | Legs very long and slender, femora clavate at the apex | BERYTIDÆ. |
| (8) | 11. | Antennæ inserted below a line drawn from the centre of the eye to the apex of the face | LYGÆIDÆ. |
| (7) | 12. | Rostrum stout, bent at the base so that it does not lie against the under surface of head in repose | |
| (14) | 13. | Rostrum long, ocelli placed between the eyes | SALDIDÆ. |
| (13) | 14. | Rostrum short, ocelli placed behind the eyes | REDUVIIDÆ. |
| (6) | 15. | Tarsi 2-jointed | |
| (17) | 16. | Anterior legs inserted on the posterior margin of the prosternum | TINGIDIDÆ. |
| (16) | 17. | Anterior legs inserted in the disc of the prosternum | ARADIDÆ. |
| (5) | 18. | Mesopleuræ and metapleuræ composed of several pieces, elytra with a cuneus | |
| (20) | 19. | Elytra with an embolium | CIMICIDÆ. |
| (19) | 20. | Elytra without an embolium | CAPSIDÆ. |
| (2) | 21. | Abdomen clothed beneath with a silvery velvety pubescence; species aquatic or sub-aquatic | |
| (23) | 22. | Antennæ 5-jointed | HERRIDÆ. |
| (22) | 23. | Antennæ 4-jointed | HYDROMETRIDÆ. |
| (1) | 24. | Antennæ hidden in foveæ under the head | CRYPTOCERATA. |
| (28) | 25. | Anterior legs inserted on the disk or anterior margin of the prosternum | |
| (27) | 26. | Antennæ with 4 simple joints, no anal appendix | NAUCORIDÆ. |
| (26) | 27. | Antennæ with 3 joints, abdomen with a long anal tubular appendix | NEPIDÆ. |
| (25) | 28. | Anterior legs inserted on the posterior margin of the prosternum | |
| (30) | 29. | Rostrum free, 3-to 4 jointed. | NOTONECTIDÆ. |
| (29) | 30. | Rostrum hidden, apparently unjointed | CORIXIDÆ. |

GYMNOCERATA.

PENTATOMIDÆ.

Species short and wide, often subtriangular in form, head with its margins more or less foliaceous or acute, antennæ 5-jointed, pronotum in some produced at its

posterior or lateral angles into spines or lobate processes; scutellum very large, reaching to the base of the membrane, or in the *Scutellerina* almost or completely covering it. Elytra composed of clavus, corium, and membrane. Connexivum usually more or less reflexed. Legs simple in most of the genera, but spinose in the *Cydnina*. Tarsi 2 to 3-jointed.

Of this showy family we have only a few genera in Great Britain, they all occur on various trees and plants, and most of the species may be said to be more or less rare, only a few really occurring in abundance.

TABLE OF SUB-FAMILIES.

(2)	1. Scutellum very nearly or quite covering the membrane	SCUTELLERINA.
(1)	2. Scutellum not nearly covering the membrane	
(4)	3. Tibiæ spiny	CYDNINA.
(3)	4. Tibiæ not spiny	
(8)	5. Tarsi 3-jointed	
(7)	6. Rostrum long and slender	PENTATOMINA.
(6)	7. Rostrum stout	ASOPINA.
(5)	8. Tarsi 2-jointed, abdomen beneath with a central carina	ACANTHOSOMINA.

SCUTELLERINA.

(2)	1. Entire insect hairy	ODONTOSCELIS.
(1)	2. Insect not hairy	
(4)	3. Legs with distinct strong spines.	CORIMELÆNA.
(3)	4. Legs without spines or with very short ones	
(6)	5. Anterior angles of pronotum produced into a blunt tooth-like process	PODOPS.
(5)	6. Anterior angles of pronotum simple	EURYGASTER.

ODONTOSCELIS, *Lap.*

Of this well marked genus there are only three European species, of which we have only one in this country; they all occur in sandy localities, *fuliginosus* being found on our coasts under *Erodium*, etc. *O. dorsalis* occurs in France on the sandhills of the north coast, and may yet be added to our list; it may be known from *fuliginosus* by the silvery pubescence of its under side.

O. fuliginosa, *Linn.*.—Short, oval, widely rounded anteriorly and posteriorly, very convex, clothed with short hairs; brown or black, mottled and spotted with darker and lighter markings, very variable in colour, but almost always with a pale dorsal stripe extending from the front margin of the pronotum to the apex of the scutellum, head rounded in front, pronotum transverse, its sides rounded, just above the posterior angle with a narrow deep emargination, scutellum entirely covering the membrane, slightly narrower than the base of the pronotum; connexivum just visible beyond the margins of the scutellum.

L. 6–9 mm.

Sandy places, sandhills Deal, not rare. Sandhills Burnham, Norfolk, *Curtis*; Sandown, *Champion*; near Fakenham, *Dr. Schrimshire*, fide *C. W. Dale*.

One well marked variety of this species is quite black with the dorsal line of the pronotum and two parallel lines on the scutellum, one on each side of the dorsal line, which is often abbreviated, pale whitish.

CORIMELÆNA, *White*.

A small semi-globular, glabrous, bronzy genus of which only two European species are known. Our British one has, so far as I know, only been recorded as occurring in moss and dead leaves and by casual sweeping, but Dr. Puton, in his "Synopsis des Hémiptères Hétéroptères de France," says it occurs by sweeping in meadows, especially on Ranunculaceous plants.

C. scarabæoides, *Linn.*.—Small, nearly round, dark bronzy coloured, shining, glabrous, strongly punctured; antennæ piceous; scutellum not quite covering the corium and membrane; legs black, tibiæ spinose, tarsi piceous.

L. 3–4 mm.

Reigate Hill in moss, Deal, Woking, Purley Downs under fallen leaves, Gloucester, Mickleham, Sandhills near Burnham; Headley Lane, Reigate, Margate, Cardiff, *Billups*;

the central lobe enclosed by the cheeks, antennæ with the apical joint black; pronotum with its sides rounded, the posterior angles not prominent; scutellum narrower in proportion than in *maura*, distinctly keeled down the middle for more than half its entire length, base without lateral tubercles; connexivum narrow, unspotted.

L. 12 mm.

Rare, sandhills, Deal; Margate, *Billups*.

PODOPS, *Lap.*

A genus recognizable at once by the curious appendages to the anterior angles of the pronotum. There are several very closely allied species found in Europe of which we have only one in this country.

P. inuncta, *Fab.*—Dark brownish ochreous, deeply impressed with black punctures. Head black, central lobe ochreous, narrow, not enclosed by the cheeks, between the antennæ and the eye on each side a distinct somewhat triangular tubercle; pronotum with the anterior angles produced into somewhat dentiform appendages, dilated at the apex and especially produced on the anterior side; scutellum slightly constricted before the middle, with three pale basal tubercles; connexivum narrow; legs with the femora banded beneath with two black bands.

L. $5\frac{1}{2}$ –6 mm.

Not uncommon by sweeping, Woking, Chobham, Reigate, Deal, Worthing, Herne Bay; Devonshire rare, *Parfitt*; Norfolk rare, *Edwards*; Folkestone, *Rye*; Sandown, *Champion*; Weymouth and Weston-super-Mare, *Blatch*; Glanvilles Wootton, Portland, *Dale*; Hastings, Pegwell Bay, *Butler*; Orpington Kent, Headley Lane, Oxshott, *Billups*.

CYDNINA.

Anterior margin of the head entire, margins of head and pronotum with long hairs . . . **GEOTOMUS.**

Anterior margin of the head more or less emarginate, margins of head and pronotum without hairs . .	
Eyes viewed from the front nearly semicircular, exserted from the head for about half their width	SEHIRUS.
Eyes viewed from the front transverse, exserted for nearly three-quarters of their width	GNATHOCONUS.

GEOTOMUS, *Muls. and Rey.*

A small genus containing a few very closely allied species; of these we have only one in Britain, which may be easily known by the long hairs of the pronotum and head from those of any of the other British genera of this family.

G. punctulatus, *Costa* ; (*Ethus laevis*, D. and S.).—Oval, shining, pitchy black, inclining in immature examples to piceous, or even testaceous brown; antennae and legs piceous. Head semicircular, the eyes hardly exserted beyond the lateral margins, margins with long hairs, pronotum with the anterior margin strongly concave, the sides regularly rounded, the base nearly straight, surface impunctate in front, punctured posteriorly; scutellum deeply and closely punctured; elytra sparsely so, membrane whitish; legs with the tibiae closely and strongly spinose.

L. $3\frac{1}{2}$ –4 mm.

White Sand Bay, near Land's End, Cornwall, under stones, *Erodium*, etc.; two specimens under stones, Cowbridge, S. Wales, *Billups*.

SEHIRUS, *Am. S.*

A genus of blue or black species often with white markings, they occur generally by sweeping or in sandpits. The glabrous margins of the head and pronotum distinguish it from *Geotomus*, and the form of the eyes from its nearest ally, viz. *Gnathoconus*.

- (6) 1. More or less spotted or marked with white
 (3) 2. Sides of pronotum and corium only margined
 with white DUBIUS.

- (2) 3. Corium more or less spotted with white . . .
 (5) 4. Black, corium with only a small central spot . . . BIGUTTATUS.
 (4) 5. Blue black, corium with a large basal and
 smaller apical spot BICOLOR.
 (1) 6. Entirely black MORIO.

S. bicolor, *Linn.*.—Blue black, shining, glabrous. Head with its anterior margin slightly emarginate, the margins raised and reflexed, antennæ long, black; pronotum deeply punctured, with two irregular smooth elevations before the middle, sides slightly rounded, each with a narrow white spot extending from the front angle to just beyond the middle; scutellum and elytra deeply punctured, the corium of the latter with its basal two-fifths white, the white colour emarginate in the centre of its claval margin, the apex of the corium also is white, membrane whitish; connexivum beneath spotted with white, and the apical segment in the ♂ margined with the same colour; legs blue black, bases of the tibiæ externally white.

L. 6-7 mm.

By sweeping, Chobham; Weybridge, Headley Lane, Lee, Dulwich, Cardiff, *Billups*; by sweeping nettles, etc., Wymondsley, Herts; in ivy, Shalford and Gomshall; under *Artemisia* St. Albans, *Butler*; Norfolk, common, *Edwards*; Devon not common, *Parfitt*; Reigate, *Linnell*; Croydon, Leamington, *Blatch*; Darenth, *Champion*; Parley Heath, *Dale*; Oxford.

S. dubius, *Scop.*.—Purplish-blue, glabrous, shining, deeply punctured sides subparallel, margins narrowly white. Head punctured, its margins strongly reflexed; antennæ blue black, pronotum with its anterior margin deeply concave, its sides much rounded, and narrowly yellowish white, its base nearly straight, disc with a deep transverse impression, in front of which is a smooth elevation; scutellum punctured; corium punctured, with its lateral margins narrowly yellowish white, its apex sinuate just at the scutellar angle, membrane whitish; connexivum spotted with white; underside and legs blue black.

L. 6-7 mm.

Isle of Wight, *Brewer*; Horsley Surrey, *Billups*; Caterham and Sandown, *Champion*; Weymouth, *Blatch*; Chesil Beach, *C. W. Dale*; Hodd Hill, *J. C. Dale*.

S. biguttatus, *Linn.*—Black, shorter and more irregularly oval than the preceding, deeply punctured, margins of pronotum and elytra and a discal spot on each of the latter white. Head rugosely punctured, its margins slightly reflexed, antennæ with the apical joint considerably longer than the preceding; thorax very largely punctured with a deep transverse central impression, sides slightly rounded, margined with white; scutellum punctured, more or less wrinkled; elytra punctured, more closely towards the lateral margins, sides rounded, narrowly white, disc of the corium with a small round white spot; membrane black; connexivum margined with white; beneath, and legs black.

L. 5-6 mm.

Guestling near Hastings, in sandpits, etc.; in moss under or near *Calluna*, Hurst Green, Battle, Guestling, *Butler*; Deal, and Loughton Essex, *Billups*; Dunsford, Stoke, Devon, under dead leaves and *Peltidea canina* in February and March, *Parfitt*; Reigate, *Linnell*; Sheppy, Darent, Chatham, *Champion*; Pitlochry, *Norman*; Loch Rannoch, *Marshall*; Parley Heath, *J. C. Dale*; Lynton, *C. W. Dale*.

S. morio, *Linn.*—Black, regularly oval, punctured, basal joints of the antennæ pale. Head rugosely punctured, its margins very slightly reflexed, basal two joints of the antennæ and the extreme base of the third pale; pronotum closely and deeply punctured, with the sides and base slightly rounded, disc with a smooth elevation in front of the middle; scutellum and elytra closely and deeply punctured, entirely black, posterior margin of the corium, straight; membrane whitish; beneath and legs black, the latter very strongly spinose.

L. 7-9 mm.

Reigate, Higham Kent, Cardiff, *Billups*; Stoke Wood

near Exeter, under *Peltidea*, *Parfitt*; Mickleham, *Champion*; Lulworth, Bournemouth, *Dale*.

GNATHOCONUS, *Fieb.*

This little genus is closely allied to *Sehirus* but the transverse eyes will easily distinguish it. Its species are also rather more convex, and the central lobe of the face is not enclosed by the cheeks.

- (2) 1. Head with the central lobe shorter than the cheeks, apical joint of the antennæ longer than the fourth ALBOMARGINATUS.
- (1) 2. Head with the central lobe reaching the front margin, fourth and fifth joints of antennæ subequal PICIPES.

G. albomarginatus, *Fab.*—Short oval, black, punctured, sides of the eytra narrowly whitish. Head rugosely punctured, central lobe shorter than the cheeks and so forming a notch in the front margin, antennæ with the first and second joints pale, apical joint distinctly longer than the fourth; pronotum convex, strongly and deeply punctured, sides rounded, base nearly straight; scutellum punctured, and somewhat wrinkled, corium punctured, lateral margins slightly rounded, narrowly whitish, apical margin straight, membrane whitish; legs spinose.

L. 3-4 mm.

Woking, Wandsworth, Reigate, Bromley; at roots Hastings, Bexhill, on sandy bank Shalford, *Butler*; by shaking moss, Reigate and Headley Lane, *Billups*; Exmouth, Haldon, Sidmouth, *Parfitt*; Norfolk not common, *Edwards*; Croydon, Tonbridge, Isle of Wight, *Blatch*; Darenth, Ashstead, Sandown, *Champion*.

G. picipes, *Fall.*—Very like the preceding but with the central lobe of the face extending in front as far as the cheeks, the apical joint of the antennæ shorter, being only subequal in length to the penultimate, and the pale margin

of the elytra extending only for about two-thirds of their entire length from the base.

L. 3-4 mm.

Chobham, Bromley; Mablethorpe, Lincolnshire, *T. V.*
Wollaston; sandhills Yarmouth, scarce, Norwich, *Edwards*;
Sandown, *Champion*.

PENTATOMINA.

- | | | | |
|------|-----|---|---------------|
| (2) | 1. | Sides of the thorax foliaceous | SCIOCORIS. |
| (1) | 2. | Sides of the thorax not foliaceous | |
| (6) | 3. | Head pointed in front, and from a sideways
view much arched downwards | |
| (5) | 4. | Head elongate, much attenuated in front. | ÆLIA. |
| (4) | 5. | Head short, subtriangular | NEOTTIGLOSSA. |
| (3) | 6. | Head nearly horizontal, rounded or sub-
truncate in front | |
| (10) | 7. | Second abdominal segment beneath with a
tubercle or process directed anteriorly | |
| (9) | 8. | Process elongate, reaching to the inter-
mediate coxæ, pronotum with the sides
simple | PIEZODORUS. |
| (8) | 9. | Second abdominal segment with only a
slight tubercle in front, sides of the pro-
notum produced near the posterior angles | TROPICORIS. |
| (7) | 10. | Second abdominal segment simple | |
| (12) | 11. | Head concave, its margins raised | STRACHIA. |
| (11) | 12. | Head not concave, its margins not raised | |
| (16) | 13. | Species not very short and robust and
small; orifice of the odoriferous sac pro-
longed exteriorly into a transverse groove | |
| (15) | 14. | Head somewhat pointedly rounded in front,
central lobe of the face enclosed by the cheeks. | PERIBALUS. |
| (14) | 15. | Head subtruncate, or bluntly rounded in
front, central lobe free | PENTATOMA. |
| (13) | 16. | Species very short and robust, small,
orifice of the odoriferous sac short, not pro-
longed into a groove | EYSARCORIS. |

SCIOCORIS, *Fall.*

This genus is one of the most puzzling of the European

genera in regard to the discrimination of its species. They are all closely allied and of a very similar facies, by which they may be at once known from those of any other genus. They are of a sandy brown colour, generally punctured with black punctures, depressed in form with the margins of the head and pronotum very thin and foliaceous; the eyes small and black, more or less prominent; the connexivum dilated and flat. We have only one species in Britain.

S. cursitans, *Fab.*—Pale ochreous, punctured and more or less mottled with black. Head about as long as wide, somewhat pointedly rounded in front, antennæ slightly darker, eyes exserted for a little more than two-thirds their diameter; pronotum transverse, deeply sinuate in front, the base of the sinuation straight, sides slightly rounded, base slightly produced, straight across the base of the scutellum, disc closely punctured; scutellum punctured; elytra with the corium at its apical angle reaching to about the length of the scutellum, membrane not reaching to the apex of the abdomen; connexivum with transverse dark bands; abdomen beneath with a spot on the sixth segment and a line along the sides near the centre black; legs ochreous.

L. $4\frac{1}{2}$ –6 mm.

In sandy places; sandhills, Deal, Sandwich.

ÆLIA, *Fab.*

The elongate head and pointed nose of the species of this genus are so characteristic that they distinguish them at once from those of other genera. We have only one species in this country, which is curiously distinguished from all the other European species by having two small black spots on the intermediate and posterior femora beneath, whereas the others have never more than one; this may seem a trivial character, but it is very constant.

Æ. acuminata, *Linn.*—Shining, ochreous, longitudinally striped with pale and darker stripes, somewhat elongate,

head and thorax forming a triangle of which the base of the thorax forms the base, the elytra forming a reverse longer triangle, with the same base. Head punctured, longer than wide, pointed in front, with a dark central stripe, its centre pale; pronotum punctured, sides straight, base slightly produced, nearly straight across the scutellum; disc with a broad dark longitudinal band, its centre narrowly pale, sides with a narrower dark band just within the lateral margins; scutellum punctured, with a pale central line, shaded with a darker colour on each side; corium pale, without markings, punctured; membrane hyaline; abdomen above black with yellow markings, beneath pale; stigmata black; legs pale, second and third pairs of femora bearing two black spots beneath.

L. 8-9 mm.

Reigate, Worthing, Woking, Shiere; Darenth Wood, Deal, Cowbridge S. Wales, *Billups*; N. Yarmouth, *Curtis*; Hastings, Sandown, Mickleham, Weybridge, Darenth, Brandon, *Champion*; Hythe, *Blatch*; Lulworth, *Dale*; Teignmouth, *Blumer*.

NEOTTIGLOSSA, *Curt.*

Ælioides, *Dohrn.*

A small genus somewhat allied to *Ælia* although very different in the shape of the head; it may, however, be distinguished, in common with that genus, from the others of the Pentatomina in having the head bent downwards in front. In this genus again we have only one species.

N. inflexa, *Wolff*.—Small, shining, ochreous, punctured with black, sides of the elytra subparallel, antennæ with the fourth and fifth joints black, abdomen beneath bronzy. Head darker than the pronotum, deeply punctured, sub-triangular, deflected in front, cheeks enclosing the central lobe; pronotum punctured, the sides nearly straight,

anterior angles laterally acute, posterior angles slightly prominent, base sinuate, disc with a pale dorsal line ; scutellum and elytra punctured, the former with a dorsal line, and a basal callosity on each side, pale ; abdomen beneath bronzy, punctured with black ; legs reddish ochreous, spotted with black at the apex of the femora.

L. 4-4½ mm.

By sweeping, Bromley, Woking ; Weybridge, Virginia Water, Darenth Wood, Headley Lane, Deal, *Billups* ; Battle and Dallington Forest, *Butler* ; Howe Grove, Norfolk, *Edwards* ; Bewdley Forest, Tonbridge, Bourne-mouth, *Blatch* ; New Forest, *Champion* ; White Sand Bay, near Plymouth, *J. J. Walker* ; Folkestone, *Rye* ; Glanvilles Wootton, Portland, *Dale*.

EYSARCORIS, Hahn.

A genus of short, wide, convex species, of a dull bronzy ochreous colour, of which we have two in Great Britain, they occur by sweeping and are both rare, especially *æneus*.

- (2) 1. Scutellum with a large bronzy basal spot
without pale callosities MELANOCEPHALUS.
(1) 2. Scutellum without a basal spot but with
two lateral white callosities at the base ÆNEUS.

E. melanocephalus, Fab.—Greenish ochreous, strongly punctured with bronzy punctures. Head purplish bronzy, very closely punctured, central lobe as long as the cheeks, antennæ with the fourth and fifth joints black, pale only at the extreme base ; pronotum slightly sinuate in front, anterior angles produced into a very small lateral point ; sides nearly straight, posterior angles rounded, base produced, nearly straight across the scutellum, disc raised posteriorly, deeply punctured, near the front margin are two purplish spots ; scutellum punctured, with a large bronzy purple basal spot ; elytra punctured, membrano

slightly tinged with brown; beneath bronzy, sides of the abdomen beneath, and connexivum above spotted with yellowish; legs testaceous, femora spotted with black.

L. 5-6 mm.

New Forest, T. B. Wells, Darenth Wood; Weybridge, *Billups*; Hawkhurst, *Butler*; Esher, Chatham, *Champion*; Tonbridge, Whittlesea, *Blatch*; Folkestone, *Rye*.

E. æneus, *Scop.*—Greenish ochreous, strongly punctured, posterior angles of pronotum produced. Head bronzy, elongate, central lobe not so long as the cheeks, antennæ with the fourth and fifth joints black, extreme base of the fourth pale; pronotum with the anterior margin sinuate, its angles slightly produced laterally, sides sinuate, posterior angles produced and pointed, extending considerably beyond the base of the elytra; base produced, its central portion straight; disc strongly punctured, raised posteriorly, near the front margin are two indefinite bronzy patches; scutellum punctured, at each side of the base a prominent smooth pale callosity; elytra punctured, membrane dusky; abdomen with the connexivum pale, spotted with black; beneath bronzy in the centre, the sides pale, stigmata black; legs pale, the femora sprinkled with small black spots.

L. $4\frac{1}{2}$ -5 mm.

Rare, New Forest; Faversham, *J. J. Walker*.

PERIBALUS, *Muls.* and *R.*

A genus of only a few species, five only being recorded from Europe. It is closely allied to *Pentatoma*, but the structure of the head will distinguish it from that genus. We have only one species, whose right to a place in our list depends upon a very few specimens taken years ago. I have one specimen from the late Mr. Crotch's collection carded, with "Weston S. Mare" written on the back of the card, and one without locality from the late Mr. Harding's collec-

tion. Messrs. Douglas and Scott quote Crotch's specimen and another without locality. The Rev. T. A. Marshall records it from Cumberland.

P. vernalis, *Wolff*.—Dull, ochreous brown, densely punctured with black, antennæ orange yellow, a band across the middle of the fourth joint, and the fifth, except at its base, black. Head flat, rather pointedly rounded in front, central lobe not nearly reaching the front margin; pronotum sinuate in front, its lateral margins sinuate, narrowly white, the posterior angles much produced and rounded, base nearly straight; scutellum and elytra punctured, membrane slightly smoky, abdomen above black, connexivum with whitish spots, beneath pale greenish yellow; legs pale ochreous.

L. 10–11 mm.

Very rare, Weston-super-Mare; Borrowdale Cumberland, *Marshall*.

PENTATOMA, *Oliv.*

I have given under this head what the Continental authorities refer to three different genera; the characters are not very striking, and we have so few species in this country that I thought it was hardly desirable to make a genus for nearly every species. Our British species may be thus distinguished:—

- (4) 1. Connexivum spotted with black (subg. Carpo-
coris).
- (;) 2. Posterior angles of the pronotum produced into
sharp points FUSCISPINA.
- (2) 3. Posterior angles of pronotum simple BACCARUM.
- (1) 4. Connexivum unspotted.
- (i) 5. Lateral margins of the pronotum raised (subg.
Pentatoma) JUNIPERINA.
- (6) 6. Lateral margins of pronotum not raised (subg.
Palomena) PRASINA.

(SUBGENUS CARPOCORIS.)

P. fuscispina, *Boh.* (*baccarum*, ES. Synopsis).—Dull, yellowish ochreous, more or less tinged with red, angles of

pronotum prominent, black, antennæ black. Head elongate, its sides more or less dark, its apex suffused with red; pronotum with its front margin deeply concave, sides sinuate, strongly reflexed to the posterior angles which are raised and produced into two sharp angular processes, margins red, angles black, disc closely and rugosely punctured; scutellum and elytra punctured; connexivum with darker transverse bands, legs with the tibiæ and tarsi red.

L. 14 mm.

I only know of a few British specimens, all taken in Devonshire, one by the late *J. A. Brewer*, two recorded by *Parfitt*, one from Teignmouth, *Capt. Blumer*, and two from Bickley Woods, *Bignell*.

P. baccarum, *Linnaeus*; (*verbasci*, *De Geer*).—Brownish ochreous, hairy, with more or less of a purplish tint, antennæ and connexivum banded with black, scutellum white at the apex. Head closely and deeply punctured with black, cheeks longer than the central lobe; antennæ with the basal joint pale, the rest black, pale at their bases; pronotum with the sides raised, nearly straight in front and rounded at the posterior angles which are not produced, disc punctured, with erect scattered hairs; scutellum punctured, hairy, its apex narrowly white; elytra punctured, membrane smoky brown; connexivum with large black spots; beneath pale ochreous, with rows of black punctures; legs ochreous, hairy, tarsi darker.

L. 12 mm.

Hastings, *Ewhurst*, *Butler*; Reigate, *Oxshott*, *Chobham*, *Billups*; Devon, *Parfitt*; Norfolk, *Edwards*; Glanvilles Wootton, *Land's End*, *Dale*; Scilly Isles, *Mason*; Knowle, *Bewdley*, *St. Osyth*, *Barmouth*, *Blatch*; Howth and Dingle Ireland, *Carpenter*.

(SUBGENUS PENTATOMA.)

P. juniperina, *Linnaeus*.—Convex, bright olive green, margins of pronotum and of the base of the elytra and the

connexivum pale. Head punctured, antennæ darker towards the apex; pronotum very closely punctured, its lateral margins narrowly raised and ochreous, slightly rounded, posterior angles simple; scutellum and elytra closely punctured, the former slightly wrinkled transversely and with the apex pale, the latter with the lateral margins at the base narrowly rufescent; connexivum pale, beneath and legs concolorous with the upper surface.

L. 12-13 mm.

On Junipers, Sanderstead, Caterham and Mickleham, rare.

(SUBGENUS PALOMENA.)

P. prasina, *Linn.*; (*dissimilis*, *Fab.*; *viridissima*, *ES. Syn. nec Poda*).—Rather a flat species, bright green, punctured, lateral margins of pronotum, connexivum, and underside reddish, legs green. Head punctured, antennæ reddish, apical joint black, except at its base; pronotum with its lateral margins narrowly red, nearly straight, the posterior angles somewhat raised and produced, rounded, disc strongly punctured, with two little long transverse foveæ behind the front margin; scutellum and elytra punctured, the apex of the former pale, and the base of the lateral margins of the latter reddish; membrane dark brown; connexivum black, with paler transverse lines; beneath reddish, legs pale green, sometimes tinged with red.

L. 13-14 mm.

Not rare; "common everywhere on raspberries," *Devon, Parfitt*; Headley Lane, Orpington, *Cardiff, Billups*; Bideford; Guestling, Battle, Hollington, *Butler*; Redhill, *Linnell*; Glanvilles Wootton, Land's End, *Dale*; St. Osyth, Ilfracombe, Barmouth, *Blatch*; Chatham, *Champion*.

STRACHIA, *Hahn*.

Species glabrous, shining and brightly coloured, scarlet,

green or blue, more or less variegated with other colours ; distinguished from the other genera of the Pentatomina by having the orifice of the odoriferous sac indistinctly indicated and im-marginate, and the margins of the head reflexed. The species are in many cases very closely allied and the markings are often very variable, but we have only two British species which are easily distinguished from each other ; they occur by sweeping and are both uncommon.

- (2) 1. Bright red with black-blue markings *FESTIVA*.
 (1) 2. Green with ochreous or reddish markings *OLERACEA*.

S. festiva, *Linn.*; (*ornata*, *D.* and *S.*).—Shining red, with large black spots, membrane, antennæ and legs black. Head black, deeply punctured, central lobe depressed, margins raised, red ; pronotum red, with the anterior and lateral margins narrowly reflexed and with a raised transverse line just before the middle, disc largely and remotely punctured, with two black spots in front and four behind ; scutellum punctured, red, with a large basal spot and two small lateral apical spots blue-black ; elytra punctured, red, with a large spot entirely covering the clavus, and extending in two lobes across the inner part of the corium and a small round apical spot, blue black ; membrane black ; connexivum red, abdomen above mostly red ; beneath with the centre and a row of large spots down each side black, legs black.

L. 6–7 mm.

Rare ; Alton on a gooseberry bush, Dallington Forest, Battle on Umbellifers, *Butler* ; Hastings, Deal, Cardiff, *Billups* ; Tonbridge, *Blatch* ; Stockbury, Kent, *Champion* ; Norwich.

S. oleracea, *Linn.*.—Shining, bronzy or olive green, with yellow or red markings, antennæ black, posterior and intermediate tibiæ banded with yellow. Head bronzy green, its margins whitish ; pronotum bronzy or bluish-green, remotely punctured, anterior and lateral margins reflexed and pale, disc with a broad pale dorsal stripe

widened at the base, across the centre there is a deep transverse impression; scutellum punctured, blue green, with the apex and generally a lateral stripe yellow; elytra punctured, blue green, with the lateral margins and a transverse spot near the apex yellow; connexivum spotted with yellow, abdomen beneath blue green, legs with the intermediate and posterior tibiæ with a broad pale band in the centre, anterior tibiæ with a pale spot beneath.

L. 6-7 mm.

Rare, Deal, Chobham; Exeter, *Payfitt*; Kynance Cove, Bristol, *Dale*; Kings Stanton, Gloucester, *Blatch*; Isle of Wight, *Lewis*; Cambridge, *Bond*.

PIEZODORUS, *Fieb.*

Only one out of the two Palæarctic species occurs in this country, it may be generically known at once by the long process on the second abdominal segment; this is carried forward between the posterior and intermediate coxæ, terminating in a blunt point just in front of the latter.

P. lituratus, *Fab.*; (*purpureipennis*, *D.* and *S.*)—Large, punctured, dull olive green, often with the pronotum posteriorly and the elytra reddish, or purple, legs pale, antennæ red. Head closely punctured, central lobe reaching the front margin, antennæ red, apical joint rather darker; pronotum punctured, lateral margins very narrowly reflexed and pale, posterior angles slightly projecting beyond the base of the elytra, disc raised between the posterior angles, in front of the middle with two narrow, transverse, pale impressions; scutellum and elytra punctured, membrane subhyaline, abdomen above black, connexivum pale, beneath green, stigmata black, legs slightly tinged with red.

L. 10-13 mm.

Common and generally distributed, occurs especially on broom and furze, in the autumn.

TROPICORIS, *Hahn.*

Another genus of which we have only one representative. It may be known from all the other genera of the *Pentatomina* by the long narrow rostrum, and slightly tuberculated second abdominal segment, whose base is not produced into a long process as in *Piezodorus*, but bears in its centre a slight tubercle pointing forwards; the largely produced lateral angles of the thorax are also characteristic of the genus; in this respect it resembles *Podisus*, but the narrow rostrum will at once distinguish it therefrom.

T. rufipes, *Linn.*—Reddish bronzy-brown, posterior angles of the pronotum produced into somewhat rounded processes, with the actual angles acute. Head rather elongate, deeply punctured, central lobe reaching to the apex; antennæ red, fourth joint, towards the apex, and fifth dusky; pronotum with the anterior angles acutely produced, the lateral margins red, rugose, sinuate in front, raised and rounded near the posterior angles, which are really situated almost midway between the apical and basal margins of the pronotum, the angle itself acute, base much produced, straight across the base of the scutellum; disc very strongly punctured with black; scutellum punctured, its apex red; elytra punctured, membrane dusky, abdomen black above; connexivum red, spotted with black, beneath and legs red, stigmata black.

L. 11–14 lines.

Common by beating, and generally distributed.

ASOPINA.

- (6) 1. Sides of the thorax in front rugose or roughly toothed.
- (3) 2. Anterior femora toothed beneath PICROMERUS.
- (2) 3. Anterior femora simple.
- (5) 4. Posterior angles of pronotum produced into lobe-like processes; second abdominal segment with a spinose process at the base PODISUS.
- (4) 5. Posterior angles of pronotum and second abdominal segment simple ASOPUS.

- (1) 6. Sides of the thorax simple throughout.
 (8) 7. Anterior femora toothed beneath JALLA.
 (7) 8. Anterior femora simple (insect steel-blue or
 green) ZICRONA.

PICROMERUS, *Am. S.*

A genus easily distinguished by the spine-like posterior angles of the pronotum, together with the dentate anterior femora; the anterior tibiae also have a small spine behind, just beyond the middle. There are several European species, but we have only one in this country.

P. bidens, *Linn.*—Bronzy-brown, deeply punctured with black, some of the interstices reddish; antennae and legs red, pronotal spines black. Head bronzy-brown, central lobe reaching the front margin; pronotum with its lateral margins narrowly red and rugose, diverging in nearly straight lines to near the middle, when they diverge more rapidly and form two large spine-like angles; base produced, its scutellar angles acute, disc strongly punctured; scutellum and elytra strongly punctured, the apex of the former and two small callosities at its basal angles red; abdomen bronzy above, red-brown or red beneath, legs slightly pilose, spines of anterior femora and tibiae black.

L. 12–14 mm.

Wimbledon, Chobham, Reigate; Battle, Dallington Forest, Netherfield amongst *Calluna*, *Butler*; Esher, Weybridge, Headley Lane, Loughton Essex, *Billups*; Dublin, *McNab*; Chatham, *Champion*; St. Ives, *Mason*; Glanvilles Wootton, *J. C. Dale*; Whittlesea Mere, *C. W. Dale*.

PODISUS, *H. S.*

There is only one European species of this genus, which is easily characterized by the lobately produced posterior angles of the pronotum and the spinose process of the

second abdominal segment; in this respect it approaches to *Tropicoris*, but its stout rostrum and short antennæ will at once distinguish it from that genus.

P. luridus, *Fab.*—Ochreous with green reflections, fourth joint of the antennæ orange-yellow at the apex, sides of the pronotum lobately produced posteriorly; legs testaceous, spotted with black. Head green, with purplish reflections, deeply punctured, margins raised, central lobe shorter than the cheeks, free in front; pronotum with the lateral margins widely green, edges rugose, produced posteriorly into two rounded processes, projecting considerably beyond the sides of the elytra; disc deeply punctured, the punctures closer and more rugose towards the sides; scutellum and elytra ochreous, deeply punctured with green or black, the irregular grouping of the punctures giving a somewhat mottled appearance; membrane dusky, with coppery or purple reflections; abdomen blue-black above; connexivum green, spotted with orange; beneath and legs ochreous, sprinkled with black or green spots; legs pilose, anterior tibiæ with a black spine posteriorly, tarsi nearly black.

L. 10–12 mm.

Not common, Bromley ES; off birch, Norfolk, *Edwards*; Chertsey, Weybridge, Headley Lane, Margate, *Billups*; Battle, *Butler*; Glanvilles Wootton, Tenby, *Dale*; Knowle, Barmouth, Wicken Fen, Chobham, St. Osyth, *Blutch*; Darent, Caterham, *Champion*.

ASOPUS, *Burm.*

This genus, formerly known in our lists under the name of *Rhucognathus*, has only one representative in Europe; it is very distinct from any of our other genera, being most closely allied to *Podisus*, but separable at once by the simple angles of the pronotum, the shorter more convex

form, the long apical joint of the antennæ, and the largely rounded apex of the scutellum.

A. punctatus, *Linn.*.—Ochreous or brownish, varying to green or purplish, densely punctured with green or purplish punctures; angles of thorax slightly prominent; antennæ black, tibiæ banded with yellow. Head green or purplish, sides sinuate; pronotum with the lateral margins rugose in front, posterior angles produced beyond the sides of the elytra; base, across the scutellum, nearly straight; disc deeply punctured, more closely so near the sides, dorsal line pale; scutellum and elytra deeply punctured, the apex of the former largely rounded, almost half as wide as the base; membrane black, abdomen above blue-black; connexivum spotted with yellow, underside varying from pale ochreous-yellow with black punctures to purplish-blue; legs bronzy-green or purplish, each of the tibiæ with a central pale band.

L. 7–9 mm.

A very variable species in colour, some specimens being nearly of a bronzy tint throughout. Mousehold Heath, Norwich, *Edwards*; Eastbourne, *Butler*; Weybridge, Headley Lane, Loughton Essex, *Billups*; Wimbledon Common, in moss; Budleigh Salterton, *J. C. Dale*; Bournemouth, *C. W. Dale*; Cannock Chase, *Blatch*; Loch Rannoch, *Marshall*; St. Ives, *Mason*; Southampton, Mickleham, Esher, Leith Hill, *Champion*.

JALLA, *Hahn*.

The species representing this genus in Britain is one of our greatest rarities; it may be known generically by its stout rostrum, the smooth simple sides of the pronotum and the toothed anterior femora and tibiæ.

J. dumosa, *Linn.*.—Dark brownish red, more or less marked and suffused with black, legs black, tibiæ with a

red central band. Head black, finely punctured, with a raised central red line, antennæ black; pronotum with the lateral margins slightly curved, obtusely raised, smooth, and red, posterior angles not produced; disc dull reddish, with very large scattered black punctures, the anterior portion of the pronotum and the sides within the red lateral margins are black, slightly impressed and closely punctured, there is a smooth red dorsal line in front; scutellum closely punctured, black, dorsal line and a spot at each side of the base, red; elytra closely and finely punctured, brownish-red; abdomen above and beneath black; connexivum at the edge red, the red colour produced above into a small spot on each segment; legs black, each tibia with a wide red central band; anterior femora with a tooth towards the apex; anterior tibiæ with a thorn-like tooth posteriorly.

L. 11-12 mm.

Deal, one in larval condition; taken also by Dr. Power.

ZICRONA, *Am. S.*

Generically allied to *Jalla*, but very different in general aspect; the steel-blue colour and small size would distinguish it easily enough; but the chief generic characters are the simple anterior femora and the shining smooth surface of the entire insect.

Z. cærulea, *Linn.*—Entirely of a steel-blue or blue-green colour, smooth and shining, central lobe of the head raised posteriorly and depressed in front, not enclosed by the cheeks, antennæ black; pronotum rather largely punctured, the sides straight, the posterior angles rounded, projecting slightly beyond the sides of the elytra; scutellum and elytra punctured, membrane black, anterior tibiæ with a small spine-like tooth posteriorly.

L. 6-7 mm.

Wimbledon Common; Mickleham, Chilworth under *Junipers*, Netherfield amongst *Calluna*, Battle amongst *Mentha hirsuta*, Dallington Forest, *E. A. Butler*; Ventnor on hill side amongst grass; Headley Lane, Horsley Surrey, *Billups*; Devon, *Parfitt*; Glanvilles Wootton, *J. C. Dale*; Chatham, Canterbury, Higham Kent, Woking, *Champion*; Swansea, *Blatch*; Ambleside, Land's End, *C. W. Dale*.

ACANTHOSOMINA.

ACANTHOSOMA.

As in *Pentatoma* I have included under this genus what the Continental authorities refer to three different genera; these I have treated as sub-genera, feeling that in our limited fauna it is better, unless the generic distinctions are very strong, to restrict the number of genera as much as one reasonably can—the two-jointed tarsi will at once distinguish this genus from all the other British genera of the *Pentatomidæ*, the strongly-developed vertical plate of the mesosternum and the carinated abdomen, with the long spine on its second segment, are also characteristic of the genus. The care shown by the female parent of *A. griseum* for its young has been pointed out by De Geer, and verified comparatively recently by the late Rev. J. Hellins of Exeter, who, in the "Entomologist's Monthly Magazine," vol. vii. p. 53, and vol. xi. p. 42, gives interesting accounts of his observations. He observed a female laying eggs on the underside of a birch leaf, about the 6th June; she laid about thirty to forty eggs in a diamond-shaped batch; under the microscope an egg appeared "long in shape, twice as long as wide, plump, a little depressed on the sides, reticulated all over very faintly, somewhat glossy, and in colour pale whitish-green." The mother took her stand over these eggs, but Mr. Hellins did not think that her body touched them. On the 29th June

he "found the young bugs all hatched, and clustered under their mother amongst the empty egg-shells; they were yellowish-green in colour, their thoraces becoming darker than their abdomens;" and he "saw them moving their antennæ." On 3rd July he "found them showing a red streak down the middle of the abdomen, and on the 6th they had moved away from the egg-shells, and were got together by themselves." On the 9th he "found them moulting, and saw some of them kicking away their cast skins behind them: their colours were bright at first, yellow with vermilion stripe, and they soon began to move about more freely, and on the 13th migrated, now with sadly diminished numbers, to a neighbouring catkin." Mr. Hellins says that he then despatched the mother, with eight young ones, to Mr. Douglas, and I believe I have some of the actual specimens now before me; they are, of course, a good deal shrivelled up and are scarcely more than 1 mm. in length; the rostrum projects considerably beyond the apex of the abdomen, and the mandibles and palpi are projected in front. Whether this has been done artificially or whether in the young state these are free from the rostrum I am unable to say. I am not aware that similar habits to those given above have been noticed in any other genus or even species.

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|--------|---|----------------|
| (6) 1. | 1st joint of antennæ reaching distinctly beyond the apex of the head. | |
| (5) 2. | Orifice of the odoriferous sac terminating exteriorly in a long transverse furrow; connexivum not spotted. | |
| | (Subg. <i>Acanthosoma</i> .) | |
| (4) 3. | Angles of pronotum much produced | HEMORRHOIDALE. |
| (3) 4. | Angles of pronotum scarcely produced | DENTATUM. |
| (2) 5. | Orifice of odoriferous sac short; connexivum spotted. (Subg. <i>Elasmotethus</i> .) | INTERSTINCTUM. |
| (1) 6. | 1st joint of antennæ not reaching or scarcely reaching beyond the apex of the head. (Subg. <i>Cyphostethus</i> .) | TRISTRIATUM. |

(SUBGENUS ACANTHOSOMA.)

A. hæmorrhoidale, *Linn.*—Shining, ochreous or greenish, with a slight reddish tinge in places, largely and remotely punctured with black; antennæ black, except at the base, angles of pronotum much produced and dark at the apex. Head pointed, central lobe narrow, produced to the apex, cheeks punctured; antennæ with the basal joint elongate, pale, the rest dusky, darkening to the apex; pronotum very remotely and largely punctured with black, sides nearly straight in front, posterior angles produced into semi-acute processes, which are nearly black at the apex; scutellum very remotely punctured, apex very narrowly produced into an impunctate process; elytra more closely and finely punctured, membrane smoky-brown, abdomen above red at the apex; beneath and legs pale, mesosternal plate not extending to the intermediate coxæ.

L. 13–15 mm.

Abinger, Hastings, Battle, *E. A. Butler*; Devon, common, *Parfitt*; Lincolnshire, Well Vale on *Hawthorn*, *J. E. Mason*; Norfolk, *Edwards*; on *Birch*, Headley Lane, Horsley, Surrey, *Billups*; Armagh, Ireland, one specimen in May, 1888, *Rev. W. F. Johnson*; Bath, *Blathwayt*; Glanvilles Wootton, Tenby, *Dale*; Knowle, Cannock Chase, *Blatch*.

A. dentatum, *De G.*—Shining, ochreous or greenish, more or less suffused with carmine red, deeply and largely punctured with black, posterior angles of the pronotum slightly produced, rounded. Head ochreous, central lobe produced to the apex, where it is rounded, cheeks with a few scattered punctures; antennæ pale, fourth and fifth joints dusky; pronotum largely punctured with black, greenish, or ochreous when faded, its base more or less red, the apex of the posterior angles black, sides slightly concave, posterior angles rounded, projecting slightly beyond

the sides of the elytra, base sinuate across the scutellum, anterior margin with a row of punctures parallel to it, behind which is a smooth transverse elevation. Scutellum punctured as the pronotum, greenish with a red tinge towards the base, apex narrowly pointed; elytra rather more finely and closely punctured than the scutellum, red, the disc more or less green, membrane slightly dusky, with a dark spot on the outer margin and a more or less dark cloud extending from it across the entire width of the membrane; abdomen above black, connexivum ochreous, produced at the apex into a projecting angle beyond the central part of the abdomen, apex of the abdomen red above and beneath, the rest of the underside ochreous; stigmata black, legs ochreous, apex of tarsi black; mesosternal plate extending posteriorly a little beyond the intermediate coxæ.

L. 8-10 mm.

Birch and other trees, Norfolk, *Edwards*; Shirley, Plumstead, Reigate, *Billups*; Hastings, *Butler*; Armagh, *Johnson*; Glanvilles Wootton, Purley Heath, *Dale*; Knowle, Brandon, Barmouth, Hunstanton, *Blatch*; Forres, *Norman*.

(SUBGENUS ELASMOTETHUS.)

A. interstinctum, *Linn.*; (*griseum*, *auct. nec Linn.*)—Shining, ochreous, more or less red towards the margins, strongly punctured with black, connexivum spotted with black. Head with the central lobe projecting as far as the cheeks, largely punctured with black, antennæ pale, with the terminal joint black at the apex; pronotum with the anterior angles slightly produced laterally, sides nearly straight, posterior angles produced but not acutely, base sinuate across the scutellum, surface largely punctured with black, disc much raised posteriorly; scutellum punctured, ochreous, with a black cloud across the base; elytra rather

less strongly punctured than the scutellum, membrane nearly hyaline; abdomen above black, connexivum red with narrow black bands; beneath and legs ochreous red, thorax punctured with black, stigmata black, mesosternal plate extending backwards beyond the intermediate coxæ.

L. 8 mm.

On Birch trees (for habits of mother and young, see generic description), generally distributed.

A closely allied species, "*Fieberi*," occurs on the Continent, which may be known by the black antennæ and the strongly produced anterior angles of the pronotum.

(SUBGENUS CYPHOSTETHUS.)

A. tristriatum, *Lin.*.—Shining, punctured, green, clavus and the corium inwardly and apically blood red, thoracic angles simple, antennæ ochreous. Head rather finely punctured, central lobe rather broad, extending beyond the cheeks and rounded at the apex, antennæ reddish ochreous, the apex darker; pronotum rather largely punctured, anterior margin very slightly sinuate, sides nearly straight, posterior angles projecting slightly beyond the margins of the elytra, base across the scutellum slightly sinuate; scutellum largely and remotely punctured, with a smooth slightly raised dorsal line; elytra punctured rather closely along the external margin, and on the clavus, but with an elongate impunctate very shining region near the middle; posterior margin of the corium rounded, membrane hyaline, with a small brown patch just below the centre of the posterior margin of each corium and an irregular narrow transverse cloud beyond it; abdomen black above, with the apex widely, and connexivum pale, the latter terminating on each side in an acute angle; beneath and legs greenish, tarsi piceous.

L. 10 mm.

Juniper bushes, Boxhill and Mickleham, Cisbury near Worthing; Weston, *J. C. Dale*; Newcastle, *Wailes*.

COREIDÆ.

Species very variable in form, frequently with the pronotum and the connexivum more or less laterally produced, antennæ stout, with the terminal joint usually thicker than the rest, and the basal joint in the *Coreina* strongly developed, antenniferous tubercles strongly developed; antennæ inserted above an imaginary line drawn along the side of the head from the centre of the eye to the apex of the central lobe of the face; pronotum often produced and raised at the postero-lateral angles; scutellum of medium size, elytra consisting of corium, clavus, and membrane; membrane with numerous nervures, frequently branching from a common nerve running parallel to the apical margin of the corium. Connexivum in the *Coreina* usually more or less dilated and raised.

The exponents of this family are vegetable feeders and most of them may be taken by sweeping; but some, such as *Pseudophlæus*, etc., live under low-growing plants in sandy places.

TABLE OF SUBFAMILIES.

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|-----|---|-----------------|
| (6) | 1. Orifice of odoriferous sac very distinct, often auricular in form, not hidden between the intermediate and posterior coxæ. | |
| (5) | 2. Cheeks not produced beyond the central lobe of the face. | |
| (4) | 3. Apical joint of the antennæ short. | COREINA. |
| (3) | 4. Apical joint of the antennæ very long and curved. | ALYDINA. |
| (2) | 5. Cheeks produced beyond the central lobe. | STENOCEPHALINA. |
| (1) | 6. Orifice of odoriferous sac indistinct or hidden between the intermediate and posterior coxæ. | CORIZINA. |

COREINA.

- | | | |
|------|--|----------------|
| (12) | 1. Antenniferous tubercles with an external spine or prominence at the side. | |
| (7) | 2. Scutellum impressed at the base, and with a distinct dorsal carina. | |
| (4) | 3. Pronotum nearly as long as wide . . . | SPATHOCERA. |
| (3) | 4. Pronotum much wider than long. | |
| (6) | 5. Sides of the pronotum rugose and more or less spinose . . . | PSEUDOPHILEUS. |
| (5) | 6. Sides of the pronotum simple . . . | BATHYSOLEN. |
| (2) | 7. Scutellum simple. | |
| (9) | 8. Surface of insect hairy, sides of pronotum spinose . . . | COREUS. |
| (8) | 9. Surface of insect not hairy, sides of pronotum simple. | |
| (11) | 10. Antenniferous tubercles with a strong external spine . . . | ENOPLOS. |
| (10) | 11. Antenniferous tubercles not spinose . . . | CERALEPTUS. |
| (1) | 12. Antenniferous tubercles without an external spine or prominence. | |
| (14) | 13. Head with two converging spines between the antennæ . . . | SYROMASTES. |
| (13) | 14. Head simple between the antennæ. | |
| (16) | 15. Connexivum strongly and angularly dilated in the middle . . . | VERLUSIA. |
| (15) | 16. Connexivum not angularly dilated in the middle . . . | GONOCERUS. |

SPATHOCERA, *Stein.*

A genus of few species, much resembling each other in form, but differing in the form of the antennæ, pronotum, etc. We have only one species in this country ; they occur in sandy places and are all more or less local and uncommon ; the elongate pronotum with its sharp lateral margins and the deeply impressed scutellum at the base will distinguish it from all the other genera of this section.

S. Dalmanni, *Schill.*.—Dull brown, subrugose. Head bearing numerous tubercular spines, central lobe of the face at its apex somewhat spatulate, antenniferous tubercles large and angularly produced, basal joint of the antennæ triquetrous, much thicker than the rest ; second joint about half the length of the third, third slightly dilated and black at the apex, fourth black, ovate ; pronotum with the

anterior margin about half as long as the base, its angles produced forwards, sides sinuate, paler than the disc, posterior angles slightly raised, base lobately produced on each side above the corium, straight across the base of the scutellum, disc granulately rugose in front, with two slight longitudinal impressions; scutellum deeply impressed and dark at the base, with a pale dorsal carina dividing the impression; nerves of the corium rather strongly raised, sides of the connexivum slightly rounded, its surface uneven, apex of the abdomen rounded in the ♂, in the ♀ the apex of the connexivum is abruptly truncate, and then follow the two narrower genital segments, of which the apical is much narrower than the preceding; underside slightly paler than the upper, freckled with darker spots; legs brown.

L. 5-6 mm.

Rare, Weybridge in *moss*, *Douglas and Scott*, and *Power*; *Reigate Heath*; *Deal*, *Billups*.

ENOPLOPS, *Am. S.*

A genus of few species, easily known from its allies by the spiniform antenniferous tubercles, and the broadly dilated connexivum; in the ♀ the sixth dorsal segment is largely and angularly emarginate, showing the two genital segments, which are much narrower than the sixth, the apical one being deeply cleft; in the ♂, the apex of the abdomen viewed from above is subtruncate and just shows the genital segment beyond, which is formed like a deep cup. We have only one species in this country.

E. scapha, *Fab.*—Dark brown, dull, closely punctured with black, head covered with small white rugosities, looked at from above, produced in front into a pointed process, sides of the head in front of the eyes pale, as are also the spiniform tubercles, antennæ with the basal joint thick,

slightly curved, rugose and coloured like the head, second and third joints red, finely rugose, the latter darker and somewhat prismatic at the apex, apical joint oblong-ovate, dark; pronotum much raised and widened behind, punctured and more or less rugose, anterior margin about a third as long as the base, sides narrowly pale and rugose in front, deeply sinuate, raised and rounded posteriorly with a slight indication of a posterior angle, base rounded; scutellum finely rugose; elytra punctured, each puncture with a slight rugosity at its side which bears a short hair; connexivum widely dilated, with a pale spot on each segment; disc of the abdomen above yellow, the rest black; beneath ochreous, punctured with black, legs with the femora brown, tibiæ ochreous, spotted with black.

L. 11–12 mm.

Folkestone, Scarborough, Charmouth and Tenby, Newcastle, *Douglas and Scott*; Sandown, *Butler*; Sandwich, Cowbridge S. Wales, *Billups*; Ventnor, *Champion*; Falmouth, *Dale*; Isle of Wight, *Blatch*.

SYROMASTES, *Latr.*

Of this genus there is, I believe, only one European exponent, which may be easily known by its broad form, its wide pronotum, which is almost as wide as the abdomen in its widest part, and the two convergent spines between the antennæ; genital segments as in *Enoplops*, but completely hidden in the ♂ by the preceding dorsal segment, and shorter and of more equal width in the ♀; it is generally a tolerably common insect in autumn, and occurs by sweeping.

S. marginatus, *Lin.*.—Dull brown, finely punctured with black. Head with the antenniferous tubercles simple externally, but each bearing a spine on their inner margin, which converge and almost touch at their apices, face

beyond the antennæ nearly vertical ; antennæ finely rugose, with the basal joint long, thick, and slightly curved, second and third narrow and red, fourth brown except at the extreme base, which is red ; third joint obliquely truncate at the apex ; pronotum much raised posteriorly, anterior margin straight, about a quarter the length of the widest part of the pronotum, sides slightly sinuate in front, raised and rounded just before the postero-lateral angles, which are distinct but obtuse ; base largely produced, nearly straight across the scutellum ; disc slightly concave in front, and with a curved raised transverse line just above the base ; scutellum simple ; elytra finely punctured ; connexivum broad and reflexed, with a slightly paler spot on each segment ; disc of the abdomen black at the base, red beyond the middle ; beneath ochreous, punctured with black, legs with the femora punctured with black, and with two rows of very short black spines beneath, tibiæ pale, tarsi reddish.

L. 14–15 mm.

Generally distributed in the South of England, but not recorded from Norfolk ; Cardiff, *Billups* ; Barmouth, *Blatch*.

VERLUSIA, *Spin.*

Of this genus our one representative is not likely to be confounded with any other, the almost diamond-shaped abdomen being peculiar as a generic character ; the abdomen is widest at the fourth segment, from which it narrows to the base and apex, its sides converging both ways in almost straight lines ; genital segments much as in *Syromastes*, the male segment being hidden from above.

V. rhombea, *Lin.*.—Pale brown, with a darker puncturation. Head with the eyes close to the anterior margin of the pronotum, antenniferous tubercles simple, head

between the antennæ, looked at from above, produced into a pointed process; antennæ with the basal joint thick and slightly curved, second much thinner, slightly tapering from the base, third narrow and parallel sided, reddish like the second, fourth darker, ovate, red at the extreme apex; pronotum slightly raised posteriorly and at the sides; sides nearly straight, posterior angles acute and produced, base produced, slightly sinuate across the scutellum, with a raised line just within it; scutellum simple, and punctured like the elytra; connexivum largely and angularly produced at each side, unspotted; disc of abdomen above, ochreous with numerous black spots, arranged in three indefinite longitudinal series; beneath pale ochreous, sparsely punctured with black; legs ochreous, simple.

L. 10 mm.

Woking, Chobham; Gomshall, *Butler*; Darenth, Caterham, Esher, *Champion*; Whitesand Bay, Plymouth, *J. Walker*; Deal, *Douglas*; Manaton and Exeter, Devon, *Parfitt*; Glanvilles Wootton and Bournemouth, *Dale*.

GONOCERUS, *Latr.*

Elongate, head simple, without spines, antennæ long, pronotum with the posterior angles produced and acute; connexivum narrow, genital segment of ♂ hidden from above, those of the ♀ gradually narrowing to the apex, which is bifid. Our one British species occurs on the *Box* (*Buxus sempervirens*), on the Continent it occurs on other plants. There are two other European species, one occurring on *Juniper*, the other on *Arbutus* and *Mastick*.

G. venator, *Fab.*—Pale reddish brown, punctured with black punctures, head simple, the central lobe slightly longer than the cheeks, antennæ with the basal joint of the same colour as the head, and finely rugose, slightly thickened and curved, second and third joints red, fourth

darker, about half as long as the third; pronotum considerably raised posteriorly, especially at the angles, sides sinuate, margins finely rugose, posterior angles produced, acute, base produced, slightly sinuate across the scutellum, and with a strongly raised line parallel to it; scutellum faintly wrinkled transversely; connexivum only slightly produced laterally, evenly rounded to the base and apex, disc of abdomen above black, with a pale central spot and pale at the apex; beneath and legs pale ochreous.

L. 11-12 mm.

On Box-trees at Boxhill Surrey.

PSEUDOPHLÆUS, *Burm.*

A very distinct genus, which may be known at once by the tubercular surface of its head and pronotum; the basal joint of the antennæ is short and thick and very rugose; the anterior coxæ in the ♂ have a spinose tooth posteriorly, the genital segments are shaped much as in the preceding genus. The posterior femora in our British species are simple; there are two other European species, but they are both from the South, and therefore not likely to occur in England.

P. Fallenii, *Schill.*—Greyish ochreous, very rugose, irregularly mottled with black. Head very rugose and tuberculous, antenniferous tubercles large, blunt, basal joint of the antennæ short, about one half as long as broad, very rugose, second and third thin and finely granulated, fourth ovate, black; pronotum much raised posteriorly, lateral margins tuberculously spinose, deeply sinuate, posterior angles largely rounded, with their margins reflexed and rugose, base nearly straight across the scutellum, with a strongly raised line on the disc just within it; disc with three anterior impressions, of which the centre one is the deepest and best defined, and in which are some short erect black spines, the interstices of these impressions run up as

ridges on the punctured posterior portion of the disc; scutellum punctured, with a pale dorsal ridge and margins; elytra punctured, nerves much raised, spotted with black, membrane hyaline, with small black spots on the nervures; connexivum wide, slightly raised, with darker brown bands; abdomen pale on the disc, legs brownish, tibiæ paler.

L. 7 mm.

Deal; Braunton Burrows, Devon, *Curtis*; Freshwater Bay, Pembrokeshire, *Marshall*; Brandon, *J. J. Walker*; St. George's Hill, Weybridge; Taff's Wells, near Cardiff, *Billups*.

BATHYSOLEN, *Fieb.*

This genus, of only one species, is closely allied to *Pseudophilæus*, but may be known by its having the lateral margins and surface of the pronotum simple, and the front coxæ simple in both sexes; the posterior femora are spinose at the apex.

B. nubilus, *Fall.*.—Brown, rugosely punctured. Head finely rugose, antenniferous tubercles large and blunt, basal joint of the antennæ short and stout, finely rugose, second and third joints thin, very finely granulated, fourth joint ovate, black; pronotum transverse, lateral margins nearly straight in front, rounded posteriorly, with a slight tooth indicating the posterior angles; base produced, its posterior margin nearly straight; disc nearly flat, finely rugose and punctured, with a curved, raised line near the base; scutellum foveated at the base, with a central carina at the apex; elytra deeply punctured, the nerves much raised; membrane smoky; connexivum dark, with narrow, paler bands; abdomen above reddish, beneath reddish ochreous, more or less mottled with darker colour; legs with the tibiæ pale, posterior femora with a short sharp spine near the apex.

L. 6–7 mm.

Very rare, Deal, *Douglas and Scott*; I have a specimen ex *Harding's* Collection, probably from Deal; *Mr. Edwards* records two specimens from Norfolk, one taken by *Mr. F. Norgate* and the other found dead by himself "at the roots of grass in a lane off Unthinks Road," Norwich.

CERALEPTUS, *Stein.*

This genus may be known by the subequal first and second joints of the antennæ, the straight denticulate sides of the pronotum, and the group of spines near the apex of the posterior femora. There are two other European species, both of which are meridional.

C. lividus, *Stein (squalidus, D. and S.)*.—Ochreous, punctured. Head finely rugose, with a black stripe on each side, in which the eye is situated, antenniferous tubercles small and only slightly prominent, central lobe of the face wide, longer than the cheeks, basal joint of the antennæ brownish, elongate, finely rugose, and slightly curved, second about equal to the first in length, red, third and fourth dark, except at the extreme base of the former; pronotum trapezoidal, sides dark or black in front, lateral margins nearly straight, denticulate in front, posterior angles simple, base slightly produced, nearly straight; disc flat, gradually raised to a line just within the base; dorsal line impressed and smooth; scutellum flat, punctured; elytra punctured, membrane with the nerves dark; connexivum raised, mottled with darker brown and with pale transverse bands; abdomen above and beneath pale; legs pale, apex of posterior femora darker, and with a group of three or four spines beneath, of which the basal one is much the longest and slightly curved, on the basal side of this group is another small spine; tibiæ and tarsi pale, slightly darker at the apex.

L. 8-10 mm.

Deal Sandhills, *Power and Douglas*; Chatterden Kent,

Champion; Chobham, by sweeping, *Billups*; Camber Sandhills, *Collett*.

COREUS, Fab.

The species of this genus are very closely allied and difficult to determine, but we have only one in this country, and the generic characters are so well defined that there is little chance of confusing it with any other British species. The entire insect above is more or less hairy, all the joints of the antennæ are thick and bristly and of nearly equal width, the sides of the pronotum are armed with a row of long pale spines, and the posterior femora have a group of spines near the apex. The species are found by sweeping, &c.

C. denticulatus, Scop.—Reddish brown, hairy and punctured. Head rugose, antenniferous tubercles produced, but blunt; joints of the antennæ rugose and hairy, the hairs bristly and erect, basal joint very slightly thicker than the rest, apical joint elongate ovate, black; pronotum with the sides very slightly sinuate, armed with a row of white spines, posterior angles acute, spinose, base produced, its short lateral margin between the posterior angle and the base of the elytra spined like the sides of the pronotum in front of the angles, basal margin with a spine on each side of the scutellum; disc flat, rugosely punctured, gradually raised posteriorly, and with a transverse carina situated just within the basal margin; scutellum flat, punctured, slightly raised; elytra rugosely punctured, and with a few slightly darker spots on the raised nerves; membrane slightly smoky, nerves with longitudinal dark markings; connexivum slightly reflexed, rest of the abdomen above red, base and a small elongated narrow apical spot black, beneath ochreous red; legs brown, mottled, posterior femora with a group of spines near the apex, of which the basal one is the longest, and with a single spine nearer the base.

L. 7-8 mm.

Woking, Deal, Ilfracombe ; Folkestone, *Rye* ; Plumstead, Darent, Caterham, *Champion* ; Glanvilles Wootton, Portland, Bournemouth, *J. C. Dale* ; Haldon, Devon, *Parfitt* ; Knowle, Bewdley, Tonbridge, Isle of Wight, *Blatch* ; Margate, Oxshott, South Hayling, *Billups* ; Hastings, *E. A. Butler* ; Mousehold Heath, Norfolk, *Edwards*.

ALYDINA.

ALYDUS, *Fab.*

A very peculiar genus, which may be at once known by its somewhat elongate form, prominent eyes, and long curved apical joint to the antennæ, which in our British species is almost as long as the second and third together ; the clavus is very short, and the apical margin of the corium is very long ; the connexivum is not dilated, and the posterior femora are very long, and armed beneath with several spines ; male genital armature visible from above, the genital segment being open posteriorly. There are only two European species of this genus, of which we have one in this country.

A. calcaratus, *Linn.*—Brownish-black, clothed with short erect black hairs. Head with the eyes situated at some distance from the pronotum ; no distinct antenniferous tubercles ; antennæ with the second and third joints testaceous, except at their extreme apices ; ocelli very prominent ; pronotum slightly widened behind, with its front and side margins nearly straight ; posterior angles rounded, base slightly produced, with an emargination opposite the scutellum ; disc punctured and finely rugose ; scutellum punctured, produced to a sharp point at the apex ; corium and clavus brown, punctured with black, nerves very prominent ; membrane dusky brown, with numerous wavy nervures, springing from a strongly curved basal

nerve ; abdomen above bright red in the centre ; connexivum narrowly reflexed with a pale spot at the base of each segment ; beneath bronzy brown ; legs pilose, tibiæ except at the base and apex, and the base of the metatarsi testaceous ; posterior femora with four spines equidistantly placed, and two or three smaller ones near the apical spines.

L. 12 mm.

In heathy places, often in company with *Formica rufa*, which the larva greatly resembles. Woking, Chobham ; Esher, Weybridge, Leith Hill, *Champion* ; Barmouth, *Blatch* ; Mousehold Heath, Norwich, *Edwards* ; Bolt Head, Devon, *Parfitt* ; Parley Heath, Bournemouth, *Dale* ; Shalford and Ewhurst, *Butler* ; Purfleet, on a weedy bank, *Marshall*.

STENOCEPHALINA.

STENOCEPHALUS, *Latr.*

Head small and narrow, parallel-sided behind the eyes, antenniferous tubercles distinct, cheeks produced at the apex and pointed, much longer than the central lobe of the face ; antennæ with the apical joint long and curved ; elytra slightly widened beyond the middle, posterior femora simple ; male apical segment visible from above.

A genus of very closely allied species, and very similar to each other in general facies. We have only two species in this country.

- (2) 1. Second joint of the antennæ with a black ring in the centre, membrane with dark spots between the nervures ; antennæ and legs with short, decumbent hairs AGILIS.
- (1) 2. Second joint of antennæ not ringed in the centre, membrane without dark spots, legs and antennæ with longer erect hairs NEGLECTUS.

S. agilis, *Scop.*.—Ochreous-brown, punctured with black, clothed with very short rather scattered black hairs.

Head elongate parallel-sided, eyes situated about the middle of the sides, cheeks produced, pointed in front; basal joint of the antennæ black, slightly curved and thickened; second yellow, black at the apex, and with a central dark ring; third widely black at the apex; fourth nearly twice as long as the third, black, pale at the extreme base; pronotum with the anterior margin narrow, not half the width of the base, lateral margins straight, posterior angles simple, base nearly straight; disc flat, punctured, darker in front; scutellum punctured, extreme apex pale, raised and shining; elytra flat, punctured, behind the middle slightly broader than the pronotum in the ♂, decidedly so in the ♀; membrane brown, with numerous nervures branching from two nerves emanating from the apical margin of the corium, which unite on the disc of the membrane, enclosing a basal cell, the corium has a small white spot at the starting-point of the nerves; between the nervures of the membrane are numerous small darker spots; connexivum reflexed, spotted with yellow; abdomen red above within the connexivum, reddish brown beneath; legs hairy, base of the intermediate and posterior femora and all the tibiæ except at the extreme base and apex red, or yellowish.

L. 12–13 mm.

Chobham, Cowbridge S. Wales, *Billups*; Exmouth and Studland, *Dale*; Braunton Burrows, N. Devon, *Parfitt*; Redhill, Surrey, *J. Linnell*; Bewdley, Isle of Wight, *Blutch*; Hollington, Sussex, *Collett*; Folkestone, *Rye*; St. Ives, Cornwall, *Mason*; Darenth, Weymouth, *Champion*; Ryde, Milford Haven, Cornworthy, *Marshall*.

S. neglectus, *H. Schf.*—So like the preceding that it is unnecessary to give a detailed description; it differs in having the antennæ and legs clothed with longer more exserted hairs, in the absence of the black central ring on the second antennal joint, and in the unspotted membrane. It is also generally a narrower insect.

I have never seen a British specimen, but Messrs. Douglas and Scott record it from the "coasts of Devon;" and *C. W. Dale* from "New Forest, *J. C. Dale*."

CORIZINA.

- | | | | |
|-----|----|---|------------|
| (4) | 1. | Fourth joint of the antennæ longer and thicker than the third; antenniferous tubercles prominent externally . . . | |
| (3) | 2. | Corium entirely opaque, red, spotted with black . . . | THERAPHA. |
| (2) | 3. | Corium more or less transparent in places . . . | CORIZUS. |
| (1) | 4. | Fourth joint of the antennæ not longer and thicker than the third; antenniferous tubercles not prominent. | |
| (4) | 5. | Insect not very elongate, antennæ hairy . . . | MYRMUS. |
| (5) | 6. | Insect very elongate, antennæ not hairy . . . | CHOROSOMA. |

THERAPHA, *Am. S.*

Head short, as wide across the eyes as long, ocelli very prominent, antenniferous tubercles produced at the sides and rounded; basal joint of the antennæ short, widest in the middle, apical joint thicker than the rest, slightly longer than the third; pronotum transverse; corium not transparent, nerves not very strongly developed; membrane with very numerous fine parallel veins; colour red and black. There is only one European species.

T. hyoscyami, *Linn.*.—Rugosely punctured, red, spotted with black, clothed with scattered pale hairs. Head with the margins black, leaving a large diamond-shaped spot in the middle red; antennæ black; pronotum red, transverse, sides nearly straight, a wide anterior band and a quadrate spot near each posterior angle black; scutellum black, its apex red; clavus black except at its apex; corium red, a spot near the middle and one or two on the claval suture black; membrane smoky brown, its posterior angles black; abdomen above red, base and apex black, beneath red, each segment with three black spots, those on the apical segment confluent; legs black.

L. 9 mm.

"Caister Marrams on *Ononis* rare," *Paget's* Yarmouth ; Teignmouth and Dawlish ; Branton Burrows, *Parfitt* ; Glanvilles Wootton, Portland, Land's End, *Dale* ; on *Eryngium*, Barmouth, and Isle of Wight, *Marshall*.

CORIZUS, Fall.

Very like the preceding genus in form ; but all the species are of an ochreous or brownish colour, and the elytra are more or less transparent, with their nerves very strongly developed ; the membrane is hyaline, and the colour of the abdomen can be seen through it. We have four species, all of which are rare. There are eleven species recognized as Palearctic in Dr. Puton's catalogue ; several are very variable and have given rise to much confusion in the synonymy.

- | | | |
|-----|--|-----------------|
| (2) | 1. Posterior margins of the metapleuræ not sinuate, their exterior angles rounded not produced | CRASSICORNIS. |
| (1) | 2. Posterior margins of the metapleuræ sinuate, their external angles more or less produced. | |
| (6) | 3. Abdomen above black with pale markings. | |
| (5) | 4. Connexivum with large black spots, tibiæ with narrow brown rings | CAPITATUS. |
| (4) | 5. Connexivum unspotted or with very small black spots, tibiæ not ringed. | PARUMPUNCTATUS. |
| (3) | 6. Abdomen above orange yellow, with black markings. | MACULATUS. |

C. crassicornis, *Linn.* (*abutilon* *Rossi*).—Brownish or ochreous, rugosely punctured, antennæ with the basal joint short and thick, the remaining three subequal in length, but the apical joint thickened ; pronotum with its margins nearly straight, disc with a distinct pale dorsal line ; scutellum with a pale dorsal line at the base, its apical margin slightly raised and pale ; elytra transparent, the nerves very prominent and often spotted with black,

membrane hyaline; connexivum with black spots, disc of the abdomen above black, with yellow markings, apical segments yellow with a strongly marked central black line; beneath ochreous, often freckled with reddish or brown; metapleuræ equally punctured all over; legs pale sprinkled with black spots.

L. 7-8 mm.

A very variable species in colour, the larger paler forms used to be considered as a distinct species under the name of *abutilon* Rossi. Easily known from the other species by the metathoracic characters, the metapleuræ having their posterior external angles rounded and their surface evenly punctured all over.

By sweeping in dry places, Chobham, Reigate, Bournemouth; Deal, *Champion*.

C. maculatus, *Fieb.*—Reddish testaceous, rugosely punctured and clothed with long scattered hairs; apical joint of the antennæ much longer than the third; pronotum rather longer than in the other species, trapeziform, its sides straight, disc strongly punctured with black, and with a narrow raised dorsal line; scutellum punctured, acuminate; elytra semi-transparent, the nerves spotted with black, membrane with small dusky spots; connexivum with a black spot on each segment, disc of the abdomen above yellow with black markings, beneath yellow with a series of black dots down each side, and a central spot on the basal segments; metapleuræ punctate only on their basal portion, their posterior angles produced, and visible from above beyond the sides of the elytra; legs reddish yellow, very finely spotted with black.

L. 6-7 mm.

A very distinct species by its uniform orange yellow colour, and yellow abdomen above.

Very rare. Chobham, New Forest; Dallington Forest, Ewhurst, by sweeping, *Butler*; Sandwich, *Billups*; Parley Heath and New Forest, *Dale*.

C. capitatus, *Fab.*—Brownish red, with paler markings, and black spots. Head red rugosely punctured, and clothed with fine hairs; pronotum red, rugosely punctured, finely hairy, posterior angles smooth and rounded, disc with a narrow dorsal line; scutellum with the apex pale, and with its margin raised at the sides but not at the actual apex, giving the apex an almost bifid appearance; elytra transparent except at the sides and apex, which are red, nerves pale, spotted with black; membrane hyaline; connexivum with broad black bands, disc of abdomen above black with yellow markings; apical segments yellow with a broad black central line; beneath reddish brown, metapleuræ red in front and punctured, white posteriorly and impunctate, the posterior angles produced and visible from above, orifice of the odoriferous sac very strongly defined; legs, femora red spotted with black, tibiæ pale with brown rings, tarsi pale, apex black.

L. 5-6 mm.

Rare. Reigate, Dorking, Herne Bay; Ewhurst by sweeping, *Butler*; Headly Lane, Taff's Well, Cardiff, *Billups*; Glanvilles Wootton, Lulworth, Parley Heath, *Dale*; Sheppey, Chatham, *Champion*; by sweeping *Hypericum perforatum*, Nunton and Groveley Wood, *Marshall*.

C. parumpunctatus, *Schill.*—Ochreous. Head and pronotum rugosely punctured, the former with a black spot behind near each eye, the latter with its margins nearly straight, and with a raised dorsal line in front; scutellum acuminate, its margins raised; elytra transparent, nerves ochreous, sometimes spotted with black, membrane hyaline; connexivum pale, sometimes with small black spots; disc of the abdomen above black spotted with yellow, beneath reddish ochreous; metapleuræ punctured in front, posterior angles much produced, and very distinctly visible from above; legs spotted with black.

L. 5-6 mm.

Rare. Chobham, Reigate, Bournemouth, by sweeping in

dry places ; Deal, *Billups* ; Parley Heath, *Dale* ; Caterham, Mickleham, Esher, Weybridge, Woking, New Forest, Ashdown Forest, Sussex, Chatham, *Champion* ; Norfolk, *Edwards* ; Muxloe, Leicester, *Kirby*.

MYRMUS, *Hahn.*

Of this curious genus there is only one European representative. It may be easily known by its flat, somewhat parallel form, and its rough and hairy antennæ and legs ; the elytra as a rule are not fully developed, and in the undeveloped form the pronotum is nearly parallel sided, in the developed form it is distinctly widened posteriorly ; the antenniferous tubercles are scarcely noticeable, and the second joint of the antennæ gradually, but very slightly tapers from the base to the apex ; the apical joint is scarcely thicker than the preceding.

M. miriformis, *Fall.*—Of a greenish ochreous colour, more or less marked with brown, or in some undeveloped females bright green when alive, with red markings. Head with the eyes slightly prominent in the ♀, more distinctly so in the ♂ ; central lobe of the face longer than the cheeks, antennæ rough, clothed with erect short hairs ; pronotum with the sides slightly raised, straight, posterior angles slightly rounded, base nearly straight ; disc punctured and clothed with short hairs, ochreous or greenish with a pale raised dorsal line and often a brown streak on each side ; elytra subhyaline, the nerves strong and red ; membrane hyaline ; in the undeveloped form the elytra are only about twice as long as the scutellum ; abdomen above ochreous or green, generally with a central black or red stripe interrupted in the middle, but this stripe is sometimes absent in the ♀ ; beneath and legs ochreous or greenish, the latter rough and clothed with erect hairs.

L. 7-9 mm.

On heaths, &c., generally distributed in the South of

England; but I have no northern or western localities for it. Smithland Wood, Leicestershire, *Marshall*.

CHOROSOMA, Curt.

At once recognizable by its very elongate linear flattened form, which is quite unlike that of any other British genus; the antenniferous tubercles are quite flat at the sides, the second joint of the antennæ, as in *Myrmus*, is widest at the base and gradually tapers to the apex, the antennæ are smooth, and clothed with a very fine inconspicuous pubescence; in the ♂ the genital segments are scarcely visible from above beyond the somewhat truncate segment that covers them; in the ♀ three segments are distinctly visible, the apical one truncate; tarsi with the basal joint twice as long as the second and third together. There are three Palearctic species, all of which are closely allied.

C. Schillingi, Schml.—Very elongate, pale ochreous. Head with the eyes situated at some distance from the pronotum, central lobe of the face longer than the cheeks, antennæ with the first joint about as long as the fourth, second and third subequal in length, but second thickened towards the base; pronotum punctured, anterior margin and sides nearly straight, posterior angles rounded, bases slightly sinuate; disc with a distinctly raised dorsal line met in front by a transverse raised line; scutellum very narrow, keeled; elytra transparent, nerves pale ochreous, membrane hyaline, reaching to about two-thirds of the entire length of the abdomen; abdomen ochreous above, with a black line towards the base, within the connexivum on each side; legs ochreous, posterior femora longer than the tibiæ, the latter with a dark spot on the inner side of the apex.

L. 15–16 mm.

On Marram grass, etc.; on sandhills by the sea-coast, Lowestoft, Southwold; Deal; Camber, *E. A. Butler*; Margate, *Billups*; Exmouth, Studland, *Dale*; Freshwater Bay, Pembrokeshire, *Marshall*.

BERYTIDÆ.

A family of delicately-shaped species, with very long antennæ and legs, and characterized by having the first joint of the antennæ and the femora clavate at the apex; the pronotum also bears three keels in all the species. In the *Berytina* the head is elongate and the forehead produced in a lobe over the face; in the *Metacathina* the head is subglobose and the forehead simple.

TABLE OF SUB-FAMILIES.

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|---|-----------------|
| (2) 1. Forehead produced anteriorly in a lobe | . BERYTINA. |
| (1) 2. Forehead simple | . METACANTHINA. |

BERYTINA.

- | | |
|--|------------|
| (2) 1. Posterior femora reaching nearly to the apex
of the membrane | . NEIDES. |
| (1) 2. Posterior femora not nearly reaching to the
apex of the membrane | . BERYTUS. |

NEIDES, Latr.

Very elongate, ochraceous, vertex of the head produced in a pointed process between the eyes—this process in our British species from a lateral view is subclavate, and elevated towards the apex; eyes situated about midway between the anterior margin of the pronotum and the apex of the process; the central lobe of the face is also produced into a process, which is slightly deflected. The antennæ are very long and thin, with the apex of the first joint abruptly clavate; pronotum raised posteriorly in the developed form, flat in the undeveloped. Elytra developed, but the wings often brachypterous; legs very elongate, femora gradually incrassated at the apex. There are three European species.

N. tipularius, Linn. (*parallelus, Fieb.; depressus, D. and S.*).—Elongate, ochraceous. Head with the frontal process pointed, if viewed from above, broad and clavate if viewed laterally; antennæ with the apical joint black and the club of the first joint dark; pronotum punctured, sides and central line raised and smooth, disc raised posteriorly in

developed specimens ; elytra punctured with very strongly raised nerves, its membranal margin with four small black spots, membrane very narrow with a central dark line ; femora very long, gradually clavate at the apex ; tibiæ very thin, their extreme apex and the tarsi black.

L. 10-11 mm.

Not common. I have generally taken it casually by sweeping. Woking, Chobham, Reigate ; Glanvilles Wootton, Parley Heath, *Dale* ; Esher, Mickleham, Deal, *Champion* ; Freshwater Bay, Pembrokeshire, *Marshall* ; Haldon, Devon, *Parfitt* ; Hunstanton, *Edwards*.

Parallelus, *Fieb.* (*depressus*, *D.* and *S.*) is the brachypterous form of this species.

BERYTUS, *Fieb.*

Closely allied to *Neides*, but easily distinguished by the shorter femora, the simple central lobe of the face and the shorter second joint of the antennæ. The first joint of the antennæ is thickened at the base, and then suddenly contracted, which gives the appearance of a separate short basal joint. There are several species in this country, which have given rise to some confusion on account of their dimorphic nature, the presence of the fully-developed wings, causing a greater posterior development in the pronotum, and the modifications in the form of the membrane consequent on development imparting a very distinct appearance to the fully-developed forms. We have five British species out of the twelve Palæarctic species recorded in Puton's catalogue.

- | | |
|---|------------|
| (4) 1. Club of first joint of the antennæ black. | |
| (3) 2. Apex of femora not black | MINOR. |
| (2) 3. Apex of femora black | CRASSIPES. |
| (1) 4. Club of first joint of antennæ sometimes
darkened, but not black. | |
| (4) 5. Frontal process acuminate, viewed from
above. | |
| (8) 7. Frontal process very long, more than twice
as long as its basal width | CLAVIPES. |

- (7) 8. Frontal process triangular, not twice as long
as its basal width SIGNORETI.
(5) 9. Frontal process more or less blunt, viewed
from above MONTIVAGUS.

B. crassipes, *H. Schf.*—Ochreous; clubs of the antennæ and femora very strongly developed, black. Head raised on each side between the eyes, frontal process viewed from above somewhat blunt at the apex; first joint of the antennæ with a very strong black club, second and third narrowly black at the extreme apex, fourth black; pronotum punctured, with the lateral margins and central keel much raised; elytra widest near the middle, about three times as long as wide, punctured, its nerves very strongly raised, apex of the corium black, membrane nearly hyaline, with a darker central cloud in the ♂; legs with very strong black clubs to the femora, apical joint of the tarsi black.

L. 4–5 mm.

Rare; one species on heath near Fairlight, *Butler*; Headley Lane, *Billups*; Glanvilles Wootton, *Dale*; Hastings, Shirley, *Champion*; Lowestoft, *Edwards*.

B. minor, *H. Schf.* (*cognatus*, *Fieb.* (*macr.*); *commutatus*, *D.* and *S.* (*brach.*).—Larger and narrower than the preceding; second joint of the antennæ pale throughout, first joint with the apical club less developed, but black as in *crassipes*; elytra much longer, at least four times as long as wide in the brachypterous form; membrane wider than the corium in the macropterous form, narrower than it in the brachypterous, with a central brown stripe in the male; femora clavate, but less strongly so than in *crassipes*, the club only slightly darkened; in the developed form the pronotum is much widened and raised posteriorly; in the undeveloped form it is shorter, flatter, and nearly parallel sided.

L. 6–7 mm.

The commonest species of the genus, generally distributed, but never abundant, in moss, etc., in the South of England; Aviemore, *Champion*.

B. clavipes, *Fab.*—A longer and narrower species than *minor*, with a very long sharply-pointed frontal process; the antennæ also are very slender, and the basal joint longer than the anterior femora, whereas in *minor* it is distinctly shorter; the club is also smaller, and only slightly darkened, not black; the elytra in the brachypterous form do not quite reach to the apex of the abdomen in the ♀, which is quite five times as long as the width of the elytra; legs very long, the femora gradually clavate at the apex, concolorous, or nearly so, throughout; the apical joint of the tarsi black.

L. 7–8 mm.

Rare. I have never taken it myself, and have never seen the developed form. Whitstable, *Champion*; Freshwater Bay, Pembrokeshire, Niton, Isle of Wight, *Marshall*; Reigate, *Blatch*; Norfolk, *Curtis*.

B. Signoreti, *Fieb.* (*pygmaeus*, *Reut.* (*brach.*)).—Much smaller and broader than *clavipes*, to which it is allied by the pale clubs of the antennæ and femora; it is also smaller than *minor*, from which its pale antennal clubs will readily separate it; the femora are thicker throughout in this species than in the others of the genus, and the club at the apex less marked; in the brachypterous form the membrane is about as wide as the elytra; in the macropterous it is distinctly wider; in the male the membrane has a dark central cloud.

L. 5–6 mm.

Not rare. Reigate; Hastings, Fairlight, Hurst Green, Ewhurst, *Butler*; Mickleham, *Billups*; Cobham, Caterham, *Champion*; Moray and Perthshire, *Norman*; Aberdeen, *Reuter*; Lincolnshire, *Mason*; Riddlesdown, *Blatch*; Mousehold Heath, Norfolk, *Edwards*.

B. montivagus, *Fieb.*—A larger species than *Signoreti*, and easily known from it by its slenderer and more distinctly clavate femora, and also by its blunt frontal process; the membrane is very wide, and marked with dark brown,

somewhat curved stripes in both sexes; the femoral and antennal clubs are distinctly darkened. The brachypterous form of this species is, so far as I am aware, unknown.

L. 6-6½ mm.

Southwold, Woking, Ventnor, Worthing; Mickleham, Reigate, Caterham, Sheppey, Chatham, *Champion*; Freshwater Bay, Pembrokeshire, Milford, Isle of Wight, and Nunton, *Marshall*; Weymouth, *Blatch*; North Devon, *Stainton*.

METACANTHINA.

- (2) 1. Scutellum with a long curved spine . . . METACANTHUS.
 (1) 2. Scutellum simple METATROPIS.

METACANTHUS, *Costa*.

Elongate, sides of the head behind the eyes subparallel, vertex much raised and rounded, face very short and subtriangular; antennæ very long and delicate, first joint clavate at the apex, second and third subequal, apical joint short, three to four times as long as wide; pronotum much raised and trituberculate posteriorly; scutellum with a long curved spine springing from its base; clavus of the elytra very short, and the apical margin of the corium very long, the membrane large; legs very long and slender, femora clavate at the apex; the orifice of the odoriferous sac is produced upwards along the metapleuræ, as a sort of canal, with its sides raised, ending in a blunt process, visible even from above.

There is only one representative of this genus.

M. punctipes, *Germ.*—Pale ochreous. Head black, shining, more or less piceous posteriorly, antennæ with the first and second joints annulated with black, apical joint black, paler at its extremity; pronotum with the anterior margin raised, especially at the angles, posterior angles tuberculated, black, base narrowly reflexed and sinuate; disc much raised posteriorly, with a black transverse band behind the anterior margin, and a fine central carina terminating

posteriorly in a black tubercle ; scutellar spine pale, membrane hyaline ; abdomen ochreous, legs annulated with black.

L. 4-5 mm.

On *Ononis*, Reigate ; Hayling I. ; Fairlight, Deal, *Butler* ; Headley Lane, Cardiff, *Billups* ; Glanvilles Wootton, Lulworth, *Dale* ; Whitsand Bay, *J. J. Walker* ; Freshwater Bay, Pembrokeshire, Braunton Burrows, Devon, *Marshall* ; Barmouth and Isle of Man, *Blutch*.

METATROPIS, *Fieb.*

Head with a transverse channel between the eyes, vertex in front of it slightly raised ; antennæ very long and delicate, first joint clavate at the apex, the second shorter than the third, apical joint many times longer than wide ; pronotum much raised posteriorly and trituberculate ; scutellum simple, with a slightly raised central keel ; membrane very large ; legs very long and delicate, femora clavate ; orifice of the odoriferous sac simple. Of this genus there is only one species.

M. rufescens, *H. Schf.*—Elongate, testaceous, punctured ; antennæ paler, first and second joints ringed with black, and the club of the first joint with a black band ; fourth joint black, its apex pale ; pronotum much raised posteriorly, with a strong central keel terminating posteriorly in an oblong tubercle, posterior angles raised and tuberculated ; scutellum with a raised central keel ; clavus very short, apical margin of the corium very long ; membrane very large, slightly smoky ; abdomen reddish testaceous beneath with the base darker ; the thorax and head beneath are black ; legs pale ochreous spotted with black, clubs of the femora with a broad brown or black band.

L. 9-10 mm.

Rare, on *Circæa lutetiana*. Portsmouth, *Moncreaff* ; Glanvilles Wootton, *C. W. Dale* ; New Forest, by sweeping fern, *Marshall*.

Mr. Moncreaff, E. M. M. viii. 136, states that he found

about two dozen larvæ on *Circæa* in June, 1871, and took them home and placed them with the plants, which he potted. The next day he saw "some of them with their proboscides buried in the soft flower-buds;" they were full fed by the end of August. They changed their skins three times in captivity; its change of skin is described by him as follows: "As the creature increases in size the skin gets too short for it, and the anal extremity becomes drawn up somewhat over the abdomen; it now fixes itself firmly by its claws to a leaf or stem of the plant, head downwards, the head is bent under, the antennæ are laid along between the legs, and the larva appears to forcibly straighten the abdomen, the pressure causing the skin behind the head to split, and the thorax to be protruded through the opening; leg after leg is drawn slowly out, the head and antennæ following; the wing-cases and wings are drawn down to their proper proportions, the imago then remains suspended by the last segment; in a short time it extricates itself entirely, but is some time before coming to its proper colour and firmness."

LYGÆIDÆ.

This is one of the largest families of the Hemiptera and includes a number of genera of very diverse facies. They are mostly ground species, occurring in moss, rubbish, under dead leaves, stones, and various spreading plants; but a few are found by sweeping, and *Gastrodes* occurs on fir trees.

The antennæ are situated below an imaginary line drawn along the side of the face, from the centre of the eye to the apex of the head; the elytra are composed of clavus, corium and membrane, the nervures of the latter being few in number, not exceeding five, except in *Pyrrhocris*.

The abdominal segments in the ♀ vary in form in the different subfamilies; in the *Pyrrhocrina* all the segments

have their posterior margins straight, or nearly so ; in the *Lygaeina* the sixth segment only is emarginate. In the *Pachymerina* and *Artheneina* and *Blissina* the fifth segment is deeply emarginate, and the sixth has its centre keeled or divided longitudinally ; this central division or keel is doubtless the theoretical posterior margin of the sixth segment, and between its sides lies in some cases the ovipositor. In the *Henestarina* and *Cymina* the fourth is slightly emarginate, the fifth deeply, and the sixth as in the others ; in the *Heterogastrina* both the fourth and fifth are very deeply emarginate. In the ♂ the terminal genital segment is convex beneath and rounded, or more or less truncate posteriorly ; the other segments are straight at the apex or nearly so.

Our British genera may be divided into eight subfamilies.

TABLE OF SUBFAMILIES.

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|------|---|-----------------|
| (14) | 1. Ocelli present. | |
| (5) | 2. All the abdominal stigmata situated on the connexivum. | |
| (4) | 3. Elytra not punctured or only very obsoletely. | LYGÆINA. |
| (6) | 4. Elytra distinctly punctured | CYMINA. |
| (2) | 5. The stigmata of one or more abdominal segments ventral. | |
| (7) | 6. The stigmata of the sixth segment only ventral | BLISSINA. |
| (6) | 7. The stigmata of at least the last two abdominal segments ventral. | |
| (9) | 8. The stigmata of the fifth and sixth segments ventral, eyes pedicellate | HENESTARINA. |
| (8) | 9. The stigmata of all or at least of the last three segments ventral. | |
| (11) | 10. Cheeks scarcely shorter than the central lobe of the face. | ARTHENEINA. |
| (10) | 11. Cheeks much shorter than the central lobe. | |
| (13) | 12. Membrane without basal cells | PACHYMERINA. |
| (12) | 13. Membrane with basal cells | HETEROGASTRINA. |
| (1) | 14. Ocelli absent | PYRRHOCORINA. |

LYGÆINA.

- | | |
|--|---------|
| Species black and red, antenniferous tubercles rounded | LYGÆUS |
| Species ochreous, antenniferous tubercles angular | NYSIUS. |

LYGÆUS, *Fab.*

We have only one species of this genus out of the sixteen recorded palæarctic species, and it must be confessed that it is but a doubtful native. Its claim to a place in our list rests on only two captures of late years, one taken by the late Mr. Sidebotham at Devizes, in June, 1864, the other by the late Mr. C. G. Hall, at Dover on the 7th September, 1886. It used to be in the older lists, but it was placed by Messrs. Douglas and Scott in their lists of "Reported British Species," and since re-admitted as native by them on Mr. Sidebotham's capture (E. M. M. iv. p. 2). I had such doubts myself of its being otherwise than an introduced species that I omitted it from my "Synopsis," but this second capture seems to me to give it a right to be considered at any rate as an "occasional visitant." It cannot be confused with any other British genus of the *Lygæidæ*, although it resembles *Therapha*, a genus of the *Coreidæ*, from which its spotted membrane and its eyes, which touch the anterior margin of the pronotum, will separate it at once.

Colour red and black; head short, triangular, eyes touching the pronotum, antenniferous tubercles rounded; pronotum with the sides slightly rounded, disc nearly flat; scutellum simple; elytra parallel-sided; legs simple.

L. equestris, *Linn.*.—Bright red; posterior angles of the head, a bilobate spot in front of the pronotum, and a narrow band along the base, the scutellum, a round spot on the clavus, a central transverse band on the corium, a spot on each segment of the connexivum, four rows of spots on the abdomen beneath, the antennæ and legs black; membrane black; a narrow basal band and a round central spot, its apical margin and a short streak, near the centre of the apical margin of the corium, white.

L. 10 mm.

Very rare. Bath, *Mitford*, 1837, fide *C. W. Dale*; Devizes, 1864, *Sidebotham*; Dover, 1886, *C. G. Hall*.

NYSIUS, Dall.

A genus of small ochreous species; eyes prominent, projecting beyond the anterior angles of the pronotum, sides of the head converging rapidly behind them, antenniferous tubercles angularly produced; pronotum trapezoidal; elytra semi-transparent, membrane hyaline; orifice of the odoriferous sac large and surrounded by a smooth elevation. All the species are somewhat closely allied, and some of the continental forms, of which Dr. Horváth records ten, are very hard to separate with certainty.

- (2) 1. Scutellum with a pale central keel . . . LINEATUS.
 (1) 2. Scutellum without a pale central keel . . . THYMI.

N. lineatus, Cost. (*ericeæ*, Boh. nec Schill.; *brunneus*, Fieb.; *Scotti*, Saund.).—Ochreous. Head and pronotum strongly punctured with black, with a pale line round each eye, and a pale central lobe to the face; antennæ brownish black, paler in the middle; pronotum with a pale raised central line, sides straight, with an impressed line running parallel to them on the disc; scutellum with a raised central keel, punctured; elytra smooth, impunctate, shining, pale ochreous, apex of the corium darker; membrane hyaline; abdomen mottled with blackish brown, legs ochreous spotted with black.

L. 4–5 mm.

On heaths, Woking, Chobham; Sandpit Shalford, *E. A. Butler*; Bournemouth, *Dale*.

N. thymi, Wolyf (*maculatus*, D. & S.).—Very like the preceding, but shorter and broader; the pronotum more transverse and less widened posteriorly, with only an indication of a central keel, close to the anterior margin, and a dark band across the anterior impression; elytra whitish ochreous, shining, with the apical margin blackish brown, sides more rounded than in *lineatus*, membrane somewhat dusky; underside of head and thorax largely black; abdomen ochreous with black markings; legs

ochreous, femora spotted with black; in var. *maculatus* almost entirely black, and in this variety the whole insect is darker than the type.

L. 4 mm.

Common and generally distributed; Bundoran, Donegal, *Rev. W. F. Johnson*; Perthshire and Morayshire, *Norman*; Scilly Isles, *Mason*; Isle of Man, *Blutch*.

CYMINA.

- | | | |
|-----|--|-----------------|
| (2) | 1. Species subelongate, antenniferous tubercles prominent | CYMUS. |
| (1) | 2. Species subrotundate, antenniferous tubercles small, invisible from above | ISCHNORHYNCHUS. |

CYMUS, *Hahn*.

There are only four European species of this genus, three of which are found in this country. They are subelongate in form, with the sides of the elytra more or less rounded; the eyes do not quite touch the pronotum, the antenniferous tubercles are well defined and angular, the cheeks are much shorter than the central lobe; the pronotum is trapezoidal, the scutellum short, the apical margin of the corium long, legs short, simple. All the species are ochreous in colour, glabrous and punctured; they are found by sweeping in damp places, and are all closely allied.

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|-----|--|-----------------|
| (2) | 1. Scutellum with a strongly raised central carina, dorsal carina of pronotum elongate extending for nearly two thirds of its length | GLANDICOLOR. |
| (1) | 2. Scutellum without a keel or with only a slight one, dorsal carina of pronotum short, not nearly extending to two thirds of its length. | |
| (4) | 3. Punctuation of elytra similar and irregular throughout | MELANOCEPHALUS. |
| (3) | 4. Two more or less distinct parallel lines of punctures along the claval suture, the rest of the corium irregularly punctured | CLAVICULUS. |

C. glandicolor, *Hahn*.—Ochreous, glabrous, strongly punctured. Head with a slight ferruginous tint, nearly as long as its width between the eyes, second and third joints of the antennæ subequal, fourth elongate, ovate, black;

pronotum trapezoidal, anterior margin straight, about half the length of the base, sides very slightly rounded, base nearly straight, disc raised posteriorly, with a long well-defined dorsal carina; scutellum with a smooth pale strongly raised central carina; elytra with the sides gradually rounded, the apical margin of the corium very long, sometimes narrowly brown; there is also a longitudinal dark central line near the apex of the corium; membrane narrower than in the other species; legs short, apical joint of the tarsi black.

L. 4 mm.

Generally distributed in the South of England; Cardiff, *Billups*; Freshwater Bay, Pembrokeshire, *Marshall*.

There is a curious variety of this species which has the pronotum more convex, much wider and more raised posteriorly, and the elytra shorter and wider, the sides more rounded and the apical margin of the corium shorter. Another variety, somewhat intermediate between this and the typical form, but smaller than either, has been taken by Mr. E. A. Butler, on *Solanum dulcamara*.

C. melanocephalus, *Fieb.*—Smaller and darker than the preceding, the head, thorax and scutellum being dark brown, and the head in some specimens nearly black; the head is distinctly shorter, and the antenniferous tubercles blunter; the scutellum has no keel, and the keel of the pronotum is shorter; the elytra are ochreous, irregularly and largely punctured throughout, with the apical margin of the corium brown; membrane hyaline; abdomen brown; legs reddish ochreous, apical joint of the tarsi black.

L. $3\frac{1}{2}$ mm.

Chobham and Woking, not rarely; Esher, Caterham, *Champion*; Norfolk, *Edwards*.

C. claviculus, *Fall.*—Smaller than *melanocephalus* and much paler in colour; the head shorter and broader, the second joint of the antennæ rather shorter than the third; the pronotum wider posteriorly in proportion to its length;

the scutellum with a pale central line, sometimes more or less cariniform; elytra rather more shining, with two regular almost parallel lines of punctures on the corium near the claval suture, apical margin of the corium shorter, narrowly brown; abdomen and legs ochreous, apical joint of the tarsi black.

L. 3 mm.

Generally distributed in South of England; Taff's Well, S. Wales; Ireland, *Haliday*.

A variety of this species has been taken by Mr. E. A. Butler near Chilworth, Surrey, which is decidedly darker than the typical form and more resembles *melanocephalus*; in shape, however, it is exactly like the pale form, so that there can be little doubt of their identity.

ISCHNORHYNCHUS, *Fieb.*

Species wide and ovate; head with the eyes touching the pronotum, antenniferous tubercles small, inferior, cheeks very narrow, but as long or nearly as long as the central lobe; pronotum trapezoidal, very much widened behind, the base rounded; the scutellum large, simple; elytra with the sides more or less rounded; legs simple. There are only two known European species of this genus, which are scarcely distinguishable except by size and habitat.

- (2) 1. Larger, reddish brown, occurs on trees . . . RESEDAE.
 (1) 2. Smaller, ochreous brown, occurs on heath . . . GEMINATUS.

I. resedæ, *Panz.* (*didymus*, *Zett.*).—Red brown, or brownish ochreous, second and third joints of the antennæ ochreous, the apex of the second black, third joint shorter than the second, and about equal in length to the fourth, which with the basal joint is black; pronotum punctured, with a black anterior transverse impression; scutellum punctured, but more remotely than the pronotum; clavus with three parallel rows of punctures; corium punctured only between the discal nerves, and with a row of punctures

along its margins, two small punctiform spots on the disc, and one at the apex of one or both discal nerves and the extreme apex of the corium black; abdomen black, reddish towards the apex; legs brown, apical joints of the tarsi black.

L. 5 mm.

Off various trees by beating; Coombe Wood, Deal; Hastings, *E. A. Butler*; Oxshott, Chobham, Cardiff, *Billups*; Mickleham, Hampstead, Darenth, *Champion*; Morayshire, *Norman*. On birch, Norfolk, *Edwards*; Torquay, *Parfitt*; Haldon, Prince Town, Dartmoor, *Bignell*. On alders, Glanvilles Wootton, Bonchurch, *Dale*.

I. *geminatus*, *Fieb. (reseda, D. & S.)*.—Smaller and paler than the preceding, the eyes slightly larger and more prominent, the puncturation of the pronotum larger and more distinct; elytra rather longer and the membrane more fully developed; otherwise apparently similar.

L. 3½ mm.

Common by sweeping heath, and generally distributed.

BLISSINA.

ISCHNODEMUS, *Fieb.*

A genus of long flat parallel-sided species, of which we have only one in this country, out of the six species recorded in Dr. Puton's catalogue. The head is much constricted behind the eyes, the central lobe of the face is much longer than the cheeks, and rounded in front; antenniferous tubercles distinct, antennæ with the first joint short and stout; pronotum flat, and subquadrate, its sides rounded in front, base sinuate; scutellum wider than long; elytra rarely developed, but when developed with the apical margin of the corium very long and nearly straight; in the undeveloped form the elytra are about twice and a half as long as the scutellum, with their apices rounded, genital segments scarcely visible from above; legs short, simple.

I. sabuleti, *Fall.*.—Elongate, flat, parallel-sided, black. Head and pronotum clothed with a close greyish pubescence; antennæ black, with the second and fourth joints subequal in length, the third shorter; pronotum slightly narrower in front than behind, its anterior angles largely rounded, its base sinuate, disc flat, basal margin, at least near the posterior angles, pale; scutellum black; elytra pale ochreous, with a dark line running parallel to the margins of the corium in the undeveloped form, the space between it and the apical margin of the corium in the developed form entirely brown, membrane in the developed form slightly dusky with brown nervures; abdomen clothed with fine grey pubescence, edges of the connexivum ochreous; legs with the apices of the femora, the tibiæ and tarsi testaceous, apical joint of these last black.

L. 4-4½ mm.

Folkestone; Merton, *Power*; in August and September.

HENESTARINA.

HENESTARIS, *Spin.*

Easily known from all our other genera of the *Lygæidæ* by the pedunculate eyes. The head is short, the cheeks nearly as long as the central lobe, antenniferous tubercles small, inferior, vertex produced laterally into a process on each side, which bears the eye at its apex; pronotum more or less trapezoidal; abdomen in the ♂ with the genital segments visible from above; legs simple. There are only two European species, both of which occur in this country.

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|-----|---|-------------|
| (2) | 1. Eyes on very long pedicels, reaching far beyond the anterior margin of the pronotum. | LATICEPS. |
| (1) | 2. Eyes on shorter pedicels, reaching only slightly beyond the pronotum and nearly embracing its anterior angles. | HALOPHILUS. |

H. laticeps, *Curt.*.—Ochreous, with darker markings

and finely pubescent. Head more or less mottled with black, the eyes produced on very long narrow pedicels, which are slightly inclined upwards and forwards; the distance between the eye and the pronotum is considerably longer than the eye itself; antennæ with the basal joint mottled with black, apical joint dark brown or black, rather shorter than the third in length; pronotum considerably widened and raised behind, its sides nearly straight, disc punctured with black with a pale central line, which has a small impression on each side of it in front of the middle, closely punctured with black; scutellum with a pale central keel posteriorly and a small pale elevation at the base on each side; elytra punctured with black, and generally with a small ocellate spot near the base of the posterior margin; membrane opaque, white, unspotted at the basal angle, but granulated and streaked with black on the disc; abdomen above black in the ♀; legs testaceous spotted with black.

L. $5-5\frac{1}{2}$ mm.

Teignmouth, Dawlish, Hastings; Bexhill, *Butler*; Deal, *Billups*; Budleigh Salterton, Portland, Lulworth, Seaton, Charmouth, *Dale*; Clacton-on-Sea, *Blatch*; S. Devon and Cornwall coasts and Milford Haven, *Marshall*.

H. halophilus, *Burm.*—Easily distinguished by the shape of the head, the eyes being less produced, and on wider pedicels, which are not inclined upwards, but slightly backwards; the distance between the eye and the pronotum is not nearly as long as the eye, and the eyes somewhat embrace the anterior margin of the pronotum; the antennæ have their apical joints longer than the third; pronotum much shorter and squarer than in *laticeps* and less raised posteriorly. In colour the whole insect is generally darker, sometimes nearly black, but I have some as pale as *laticeps*, which also varies a good deal in this respect.

L. $5\frac{1}{2}$ mm.

Herne Bay, in a salt marsh near Hampton; Whitstable

and Sheppey, *Champion*; Whitsand Bay, near Plymouth,
J. J. Walker.

ARTHENEINA.

CHILACIS, *Fieb.*

This is the only genus we have of this small subfamily, and it may be easily known by its ventral stigmata and the long cheeks, as well as by the sharp foliaceous sides of the pronotum. In form it is almost regularly elliptic, the cheeks are almost as long as the central lobe of the face, the antennæ are short, with the basal joint stout and short, and the second about twice as long as the third, the antenniferous tubercles are small and inferior, the eyes not prominent, rostrum reaching to the intermediate coxæ; pronotum subtrapezoidal, lateral margins foliaceous; scutellum impressed, abdominal stigmata ventral, legs simple. There is only one European species.

C. typhæ, *Perris*.—Flat, ochreous, glabrous, shining, strongly punctured. Head across the eyes, not so wide as the anterior margin of the pronotum; antennæ brown; there are two impressed dark streaks down the face; vertex smooth, with a few large irregular punctures; ocelli very strongly developed; anterior margin of the pronotum emarginate, sides somewhat sinuate, base very slightly and very widely emarginate, disc largely and irregularly punctured with black, impressed along the sides; scutellum with a central dark impression, which is deeply punctured; elytra flat, punctured with black, the nerves much raised and pale, membrane whitish with a darker central cloud; abdomen reddish ochreous, black at the base above and beneath; connexivum with small darker spots; head and thorax beneath black, the latter margined with white and with a white spot near each coxa; legs testaceous, apical joint of the tarsi black.

L. 4–5 mm.

In bulrush heads, Stockton, *Rudd*; Ashburnam, Sussex, *Butler*; Norfolk, *Edwards*; Hastings, *Deal*.

HETEROGASTRINA.

HETEROGASTER, *Schill.*

A genus resembling many of those belonging to the *Pachymerina*, but distinguishable by the neuration of the membrane, its nervures originating from basal cells. Head short, face triangular, antenniferous tubercles angular at the sides, cheeks as long as the central lobe, basal joint of the antennæ scarcely thicker than the rest, rostrum reaching to about the middle of the mesosternum; pronotum trapezoidal; scutellum large, as long or longer than wide, membrane with two distinct basal cells; legs with the front femora thickened, and bearing a spine-like tooth beyond the middle. We have two of the five European species in Britain.

- (2) 1. Head and pronotum clothed with long erect hairs; tibiæ with three black bands . . . URTICÆ.
 (1) 2. Head and pronotum not clothed with erect hairs; tibiæ with only the base and apex black . . . ARTEMISIÆ.

H. urticæ, *Fab.*—Bronzy, variegated with paler markings, clothed with erect hairs. Head bronzy black, punctured, central lobe of the face with a pale spot; antennæ with the basal joint bronzy black, its apex and the other joints pale; pronotum bronzy, lateral margins sinuate, pale, posterior angles lobately rounded, base sinuate, disc punctured and clothed with pale erect hairs, with a large pale spot on each side of the base; scutellum bronzy, foveated, its extreme apex pale; elytra ochreous, with bronzy spots, membrane subhyaline with a small black spot near the base, and a few slight darker clouds; abdomen blue-black above and beneath; connexivum with pale spots, and the ♀ with a pale central spot beneath;

femora pale at the base and apex; tibiæ with three black rings, tarsi with the apex of the first and last joints black.

L. 6 mm.

On nettles, Deal; Betchworth, Surrey, *Power*; Darenth, Hammersmith, *Champion*; Portland, Lulworth, Seaton, *Dale*; Scilly Isles, *Mason*; Lynn, Norfolk, *Edwards*; Wicken Fen, Portland, *Blatch*; Slapton Ley, Devon; Common on nettles, Weymouth, *Marshall*; Brighthampton, Oxon, *Stone*; under *Erodium*, Deal, *C. G. Hall*; Ireland, *Huliday*; "abundant in September, 1886, in a hollow stem of Furze, at Hayling Island," also Cardiff, *Billups*.

H. artemisiæ, *Schill.*—Smaller than *urticæ*. Head bronzy, clothed with short adpressed silvery hairs, punctured; antennæ with the basal joint bronzy, its apex pale, second pale except at the extreme base, third and fourth dark, third with a pale band just above the base; pronotum punctured and pubescent like the head, bronzy, its base widely ochreous, longer and narrower than in *urticæ*, the sides and base slightly sinuate; scutellum bronzy, apex with a pale raised central line; elytra punctured and pubescent, like the head and pronotum, ochreous, with a dark spot at the inner apical angle, which varies much in size, membrane milky white, with slightly darker clouds; abdomen bronzy, connexivum with pale spots; femora pale at the apex, tibiæ with the base black, and with a dark apical spot, tarsi with the apex of the first and last joints dark.

L. $4\frac{1}{2}$ –5 mm.

In moss, Reigate; Mickleham, Caterham, *Champion*; Hayling Island, *Billups*.

PACHYMERINA.

- (2) 1. Pronotum constricted behind the middle, sides obtuse, not carinated, rounded in front of and behind the constriction PLOCIOMERUS.

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|------|-----|--|-----------------|
| (1) | 2. | Pronotum not constricted behind the middle, or if constricted then with its sides carinated. | |
| (10) | 3. | Pronotum with its sides evenly foliaceous throughout, and regularly rounded. | |
| (4) | 4. | Antennæ not bristly. | |
| (7) | 5. | Eyes not projecting beyond the angles of the pronotum. | |
| (7) | 6. | Basal joint of posterior tarsi twice as long as the other two together. | APHANUS. |
| (6) | 7. | Basal joint of posterior tarsi not twice as long as the others. | TRAPEZONOTUS. |
| (5) | 8. | Eyes projecting beyond the anterior angles of the pronotum. | BEOSUS. |
| (4) | 9. | Antennæ bristly. | EMBLETHIS. |
| (3) | 10. | Pronotum with its sides not evenly foliaceous throughout. | |
| (20) | 11. | Pronotum with a small pale foliaceous spot at the sides just behind the middle. | |
| (13) | 12. | Species very flat and broad. | GASTRODES. |
| (12) | 13. | Species not very flat and broad. | |
| (19) | 14. | Basal joint of the antennæ not nearly so long as the second. | |
| (16) | 15. | Basal joint of the antennæ projecting beyond the apex of the head for more than half its length. | EREMOCORIS. |
| (15) | 16. | Basal joint of the antennæ not projecting beyond the apex of the head for half its length. | |
| (18) | 17. | Eyes not touching the pronotum. | SCOLOPOSTETHUS. |
| (17) | 18. | Eyes touching the pronotum. | PERITRECHUS. |
| (11) | 19. | Basal joint of the antennæ three-quarters the length of the second. | NOTOCHILUS. |
| (11) | 20. | Pronotum without a pale lateral foliaceous spot. | |
| (22) | 21. | Species clothed with erect hairs. | PRONOSOMUS. |
| (21) | 22. | Species not clothed with erect hairs. | |
| (32) | 23. | Anterior femora simple. | |
| (27) | 24. | Species linear and parallel-sided. | |
| (26) | 25. | Eyes small, hardly a quarter the width of the vertex. | MACRODEMA. |
| (25) | 26. | Eyes large, nearly as wide as half the vertex. | ISCHNOCORIS. |
| (24) | 27. | Species not linear and parallel-sided. | |
| (29) | 28. | Pronotum in front very shining, and with the puncturation large and remote. | LASIOSOMUS. |
| (28) | 29. | Pronotum not very shining, puncturation close. | |
| (31) | 30. | Surface pubescent. | STYGNUS. |

- (30) 31. Surface not pubescent ACOMPUS.
 (23) 32. Anterior femora with one or more
 spines.
 (34) 33. Head small, much narrower than the
 pronotum PLINTHISUS.
 (33) 34. Head as wide or wider than the
 anterior margin of the pro-
 notum.
 (36) 35. Anterior femora with one or two fine
 spine-like teeth DRYMUS.
 (35) 36. Anterior femora with a strong tooth
 and several finer ones, or only
 with several small teeth.
 (38) 37. Anterior femora with a strong tooth
 and smaller ones RHYPAROCROMUS.
 (37) 38. Anterior femora with a row of small
 teeth near the apex TROPISTETHUS.

PLOCIOMERUS, Say.

Easily known from any of our other genera by the ecarinate sides and constricted waist of the pronotum. Head with the eyes not touching the pronotum, ocelli very distinct, antenniferous tubercles strongly defined; antennæ with the basal joint reaching beyond the apex of the face for about a third of its length, cheeks much shorter than the central lobe, rostrum not quite reaching to the intermediate coxæ; pronotum with the sides more or less rounded in front, then deeply sinuate, and again slightly rounded to the posterior angles, the constriction of the sides continued across the disc; scutellum simple; elytra subparallel-sided; membrane developed; legs with the anterior femora incrassate, with strong spines. There are six recorded European species, of which we have two in our list. There is a third species, *Luchsii*, found in Sweden, which we may yet hope to add to our fauna; it is a mountain species.

- (2) 1. Pronotum with the sides only slightly
 rounded in front of its waist, without fine
 erect pubescence FRACTICOLLIS.
 (1) 2. Pronotum with the sides much rounded in
 front of the waist, clothed with fine erect
 pubescence LUBIDUS.

P. fracticollis, *Schill.*—Head and antennæ black, the second and third joints of the latter slightly paler except at the apex; face clothed with a fine adpressed golden pubescence; pronotum punctured, black in front, base with ill-defined ochreous spots, sides constricted behind the middle, disc with a deep transverse impression, the continuation of the lateral constriction; surface almost glabrous, but with a short scattered golden pubescence visible through a strong power; scutellum black, impressed at the base, the apex ochreous and the sides with a small reddish spot on each; elytra with the clavus and corium ochreous, punctured with black, and with dark lines bordering some of the nerves; abdomen black, legs ochreous red, with a more or less dark apical band on the femora, anterior femora with two large strong teeth, each with one or more smaller ones on its distal side, anterior tibiæ straight in both sexes.

L. 5 mm.

Sweeping herbage, ditch sides, Horning Fen, *Edwards*; Wicken and Ranworth, *Champion*; New Forest, *Fowler*; Whittlesea Mere, *Dale*.

P. luridus, *Hahn.*—Much darker in colour than the preceding, finely pilose with upright hairs. Head black, antennæ brownish, pilose, apical joint longer than the second; pronotum reddish brown, velvety, of a rather brighter red on each side of the disc, sides very much rounded in front, making the waist very much more distinct than in *fracticollis*, it is also placed rather nearer the posterior angles; scutellum black; elytra with the clavus and corium ochreous, much suffused with brown towards the apex; abdomen brown, rather lighter towards the sides; legs testaceous brown, anterior femora with three long spines and several smaller ones, anterior tibiæ curved in the ♂.

L. $4\frac{1}{2}$ –5 mm.

In *Sphagnum*, Chobham; New Forest.

RHYPAROCHROMUS, Curt.

Eyes nearly or quite touching the anterior margin of the pronotum, antenniferous tubercles distinct, antennæ with the fourth joint as long or longer than the second, rostrum reaching to about the intermediate coxæ, ocelli small; pronotum subquadrate, very little narrowed in front, sides sinuate behind the middle, narrowly and distinctly raised and carinated; scutellum large; elytra with the sides subparallel, its membrane generally developed, but somewhat shortened in *antennatus*; legs with the anterior femora strongly incrassated and with a strong spine or group of spines towards the apex. This is a genus containing a good many species, of which we have only four in this country. Most, if not all, of the other European species are from the south, and not likely to occur with us.

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|-----|----|---|--------------|
| (4) | 1. | Surface of pronotum dull. | |
| (3) | 2. | Tibiæ and antennæ black, pronotum without long hairs | DILATATUS. |
| (2) | 3. | Tibiæ and second joint of antennæ generally paler, pronotum with long hairs | CHIRAGRA. |
| (1) | 4. | Surface of pronotum shining. | |
| (6) | 5. | Legs entirely yellow | ANTENNATUS. |
| (5) | 6. | Femora of anterior legs black | PRÆTEXTATUS. |

R. dilatatus, H. Schf.—Not shining, entirely black, except the nerves of the elytra, which are generally brownish, and sometimes the apex of the femora, which may have a slight rufescent tinge. Head largely punctured, clothed with fine adpressed golden pubescence, antenniferous tubercles angularly produced at the sides, cheeks much shorter than the central lobe, their apices somewhat truncately rounded, antennæ finely pilose; pronotum subtrapeziform, anterior margin emarginate, sides slightly rounded in front then sinuate behind the middle, margins reflexed, base largely emarginate, surface punctured with large punctures, disc with a deep transverse impression

behind the middle ; scutellum punctured, raised at the base with a central carina at the apex ; élytra with the corium and clavus punctured, a line along the claval suture, and occasionally the nerves, paler, membrane developed, with a pale spot at the base ; abdomen bronzy black, legs black, clothed with short hairs and longer black bristles, anterior femora strongly incrassated, with a strong spine near the apex and with several smaller ones on its distal side, anterior tibiæ curved, very finely crenulate at the base beneath.

L. 5 mm.

In moss, etc.

Weybridge, Woking, Chobham ; Esher, *Marshall* ; Norfolk, *Edwards* ; Hastings, Ewhurst, Leith Hill, *Butler* ; Reigate, *J. Linnell* ; Stoneham, Hants, Addington Hills, *Douglas and Scott* ; Weybridge, Deal, *Billups* ; Knighton Heath, Parley Heath, Land's End, *Dale*.

R. chiragra, *Fab.* (var. *sabulicola*, *Thoms.*).—Rather smaller and distinctly narrower than *dilatatus*, the second joint of the antennæ, the corium and clavus and the tibiæ more or less ferruginous, except in the var. *nigricornis*, D. & S., which has the antennæ entirely black. Head with the antenniferous tubercles and cheeks less prominent than in the preceding species, its surface with longer hairs ; pronotum longer and less widened posteriorly, its disc clothed with long upright hairs ; corium ochreous or ferruginous, more or less clouded and spotted with black, membrane paler than in *dilatatus*, its base and sometimes a spot near the apex pale ; legs with the base of the femora, the tibiæ of the anterior pairs except at the apex, and the basal joint of the tarsi ferruginous ; tibiæ, especially the intermediate pair, with strong black bristles and fine hairs, anterior femora incrassated, with a strong pale spine followed on the distal side by several smaller ones, anterior tibiæ curved.

L. $4\frac{1}{2}$ mm.

Generally distributed, in moss, rubbish, dead leaves, roots of grass, etc.

A variety of this species occurs with all the tibiae entirely pale ochreous, the third joint of the antennae as well as the second more or less pale, and the pronotum less strongly punctured at the base. This has been described by Thomson as *sabulicola*; it occurs on sandy coasts. I admitted this as a species in my Synopsis, but feel that the characters are not strong enough to maintain it as such.

R. antennatus, *Schill.*—Head and thorax black and shining, elytra with the membrane undeveloped, the corium more or less pale at the base, legs entirely pale.

Head largely punctured, with a few scattered long hairs, antenniferous tubercles very slightly prominent, antennae finely pilose, with the basal joint black at the base, yellow at the apex, second entirely yellow, third and fourth black; pronotum as long as wide, with the anterior margin emarginate, lateral margins narrowly reflexed, rounded and converging slightly behind the middle, then produced again to the posterior angles, base sinuate; disc polished and shining, with only a few scattered punctures, anteriorly and posteriorly more closely punctured; scutellum dull, finely punctured at the base, coarsely at the sides and apex; elytra with the corium and clavus pilose, clavus deeply punctured in rows, corium with a row of punctures along the claval suture, its disc less deeply and somewhat remotely punctured, membrane abbreviated, dark, paler at the base; abdomen black, shining, with an adpressed golden pubescence beneath; legs entirely pale testaceous, smooth, shining, with a few bristles on the internal margins of the tibiae; front femora with a large spine and several smaller ones near the apex.

L. 4-4½ mm.

Reigate Hill in moss, Herne Bay; Ewhurst at roots,

Butler; Manaton, Devon, *Parfitt*; Sheerness, Caterham, Whitstable, Chatham, Sandown, *Champion*.

R. prætextatus.—Bright and shining, glabrous. Head and pronotum black, largely punctured, antennæ black, with the apex of the first and of the second joints pale; scutellum black, finely punctured at the base, coarsely elsewhere; elytra with the clavus and corium punctured, pale ochreous, the apex of the latter widely black, membrane dark with a pale basal spot; abdomen black, legs pale testaceous, the anterior femora black except at the extreme apex.

L. $4\frac{1}{2}$ mm.

Local, but not rare where it occurs, at roots of grass, in moss, etc., Deal; Camber Sand Hills, *Butler*; Mousehold Heath, Norfolk, *Edwards*; Hunstanton, Weymouth, *Blutch*; Braunton Burrows, Devon, *Marshall*; St. Ives, Cornwall, *J. E. Mason*; Southend, Walton, *Champion*; Portland, *Dale*.

TROIPISTETHUS, Fieb.

A genus with only one European representative, which is a very small species, in fact, the smallest of our *Lygæide*. It may be known by the almost ecarinate pronotal margins, and by having two longer spines on the anterior femora, followed by numerous small ones between them and the apex of the femora. Head with the antenniferous tubercles largely developed, blunt, eyes not touching the anterior margin of the pronotum, rostrum reaching to the intermediate coxæ; pronotum subtrapeziform, anterior margin and base rather deeply sinuate, sides slightly so behind the middle, with a very obtuse carina only visible when examined laterally; scutellum raised at the base; elytra with the membrane often not reaching to the apex of the abdomen; anterior femora incrassated, bearing beneath two rather longer fine spines and numerous shorter ones; tibiæ without bristles.

T. holosericeus, *Schltz.*—Head and pronotum black or brownish black, the latter clothed with fine velvety pubescence, head rugosely punctured, antennæ finely pubescent, of the same colour as the head; pronotum slightly widest behind, largely punctured behind the præbasal depression, finely so in front of it; scutellum black, rather closely punctured at the base, remotely so towards the apex; elytra with the corium and clavus deeply punctured, ochreous, clouded with brown towards the apex, especially at the inner apical angle, membrane whitish, often shortened so as to expose the apex of the abdomen; abdomen black, finely pubescent, legs ochreous, tibiæ and tarsi paler.

L. 2 mm.

Rare. In moss, etc., Dr. Puton says, often in ants' nests, but I am not aware of its having been found with ants in Britain; Reigate, Wandsworth; Seaton Devon, *Dr. Power*; Mickleham, *Champion*; Ventnor, *Douglas and Scott*. Common at roots of grass, Headley Lane and Reigate, *Billups*.

ISCHNOCORIS, *Fieb.*

Subelongate, head short, eyes large, almost touching the anterior margin of the pronotum, the distance between them hardly so wide as twice the width of the eye, antenniferous tubercles small, ocelli distinct, rostrum reaching to just beyond the intermediate coxæ; pronotum slightly widened posteriorly, more so in the developed form; elytra with the membrane generally shortened and the wings undeveloped, but in the developed form the membrane reaches to beyond the apex of the abdomen; apical margins of the abdominal segments above simple; anterior femora not toothed or spinose. There are three European species of this genus, all closely allied.

I. angustulus, *Boh.* (*hemipterus*, *D. & S.*, *Saund. etc.*).—Head and thorax black, base of the latter and the apices of the first and second antennal joints pale, clavus and corium

ochreous, punctured with black, legs ferruginous, femora with a black apical band. Head very finely and rugosely punctured, apical joint of the antennæ shorter than the second; pronotum widened slightly posteriorly, especially in the developed form, its sides straight, narrowly carinated, base nearly straight, disc flat, black and finely punctured in front, the ochreous basal portion with very large black punctures; scutellum punctured, its extreme apex pale; elytra with the corium and clavus punctured with black in rows along the nerves, external apical angle of the former black; abdomen black, beneath with a spot near each coxa, and the posterior margin of the metathorax pale, legs simple.

L. $2\frac{1}{2}$ mm.

Common under heath and generally distributed over the South of England, etc. Macropterous form rare; I once took several in heaps of dead herbage, etc., at Woking in May. Aviemore, *Champion*.

MACRODEMA, *Fieb.*

Very like the preceding genus in general form and habitat, but more elongate, the eyes much smaller in proportion to the width of the vertex, and not touching the pronotum, the vertex being five times as wide as each eye; pronotum longer and more parallel-sided in the brachypterous form; abdomen more elongate, the posterior margins of the third and fourth dorsal segments widely produced, and truncate posteriorly. There is only one European exponent of this genus. It is nearly always found micropterous, but the macropterous form occurs occasionally.

M. micropterum, *Curt.*—Black, clavus and corium and a spot on each side of the base of the pronotum, and the apex of the scutellum, pale, membrane in the developed form dark with three basal spots white. Head and pronotum shining, with a somewhat bronzy tinge, largely and

deeply punctured; the latter dull across the base, sides nearly parallel and straight in the brachypterous form, diverging posteriorly in the macropterous, base deeply sinuate, disc with a narrowly impressed dorsal line; scutellum punctured; elytra with the clavus and corium punctured with black in lines, in the brachypterous form with scarcely any membrane, that of the macropterous reaching to the apex of the abdomen; abdomen and legs black, femora paler at the base, coxæ and a spot near each pale.

L. $2\frac{1}{2}$ –3 mm.

Common on heaths, under *Erica*, etc., and generally distributed but not recorded from Ireland. I have never taken the macropterous form myself, but Mr. E. A. Butler has met with it not infrequently.

PIONOSOMUS, *Fieb.*

Suboval, clothed with erect hairs. Head with the eyes moderate sized, touching the pronotum, antenniferous tubercles small, ocelli distinct; pronotum transverse, slightly widened posteriorly, lateral margins narrowly carinated, base slightly sinuate; scutellum large, lateral margins of the corium slightly rounded, membrane not quite reaching the apex of the abdomen; legs short, tibiæ spinose, anterior femora incrassated, simple. A very distinct little genus, of which there are three European exponents, all resembling each other very closely.

P. varius, *Wolff*.—Bronzy black, the second joint of the antennæ except at the apex, a spot on each side of the base of the pronotum; the extreme apex of the scutellum, the clavus and corium except a spot near the base, the apex and a lateral band in the centre of the latter, ochreous; membrane blackish with three pale basal spots, legs with the tibiæ and tarsi ochreous. Head closely and rugosely punctured, clothed with erect bristly hairs, antennæ pilose; pronotum with the sides slightly sinuate posteriorly, disc clothed with bristly hairs, remotely punc-

tured near its centre, more closely in front, and with very large punctures near the base; scutellum dull, punctured and with short bristles; elytra with the corium and clavus clothed with short bristly upright hairs, punctured with black in lines; abdomen beneath pilose; legs with erect bristles, anterior femora incrassated, simple.

L. 2 mm.

Very rare. Sandwich on the sandhills; the only recent capture of this species was made by Mr. A. Piffard, in June, 1890. The Rev. T. A. Marshall writes to me that he found it at Swanage, but did not capture any.

PLINTHISUS, *Fieb.*

Flat, glabrous, shining. Head much narrower than the pronotum, antenniferous tubercles very small, ocelli distinct, eyes touching or nearly touching the pronotum, the anterior angles of which slightly embrace them; pronotum with the anterior margin deeply emarginate, sides rounded near the anterior angles then nearly straight, margins finely carinated, base slightly sinuate, disc nearly flat; elytra in the developed form with the membrane nearly reaching to the apex of the abdomen, in the undeveloped form shortened, exposing one or more abdominal segments; legs with the anterior femora incrassated, with two small sharp spines beneath.

There are over twenty species of this genus in the Palæarctic fauna, but we have only one as yet in this country. *P. pusillus*, however, is quite likely to occur here; the others have mostly a southern distribution.

***P. brevipennis*, Latr.** (*macr. bidentulus*, *H. Schff.*).—Pitchy black, or more or less brown, shining, glabrous. Head finely and very shallowly punctured, antennæ piceous; pronotum slightly widened posteriorly (*macr.*), or subquadrate (*brach.*), deeply punctured posteriorly, superficially so on the disc; scutellum punctured; elytra

with the clavus punctured in lines, the corium with a row of punctures along the claval suture, the rest irregularly punctured; membrane slightly smoky; in the brachypterous form two dorsal segments are exposed; abdomen black, connexivum slightly paler; legs piceous, with a few fine, short, erect, bristly hairs.

L. 2-2 $\frac{1}{4}$ mm.

Common in many sandy localities, but macropterous form rare, Weybridge, Woking, Chobham; Norfolk, *Edwards*; St. Ives and Scilly Isles, *J. E. Mason*; Polperro, Cornwall, and Bridgenorth, Devon, *Marshall*; Reigate, Weymouth, *Blatch*; Camber, Shalford, Ewhurst, Lowestoft, *Butler*; Sheerness, Sheppey, Chatham, Wimbledon, Salisbury, *Champion*; Dartford, Southend, Ventnor, *Douglas and Scott*; Deal, Dagenham Essex, Cowbridge South Wales, *Billups*; Lulworth, *Dale*.

LASIOSOMUS, *Fieb.*

Shining, clothed with rather long fine hairs. Head with the eyes not touching the pronotum, antenniferous tubercles well developed; antennæ with the basal joint reaching beyond the apex of the head by about half its length; pronotum trapeziform, its anterior margin slightly raised, about the width of the head behind the eyes, with a row of large punctures within it, sides rounded in front; elytra with the sides slightly rounded; membrane pale with a yellowish tinge, nerves concolorous; legs simple, anterior femora hardly incrassated.

L. enervis, *H. Schjff.*—Head black, shining, irregularly punctured, central lobe of the face yellow; antennæ with the first three joints clear testaceous, finely pilose, apical joint black; pronotum shining, finely pilose, considerably widened behind, black; anterior and lateral margins, and a band across the base testaceous, surface with very large deep punctures except on the black part of the disc, where

the punctures are finer and more scattered; scutellum raised at the base, punctured, black, its apex paler; elytra finely pilose, with the clavus punctured in lines, the corium bright, shining, with two rows of punctures along the claval suture, and some large punctures towards the lateral margin; a longitudinal space between these is quite smooth and impunctate; membrane shining, hyaline, with a yellowish tinge; abdomen pitchy black; legs clear testaceous.

L. $3\frac{1}{2}$ mm.

Very rare, "Darland Hill, on chalk," near Chatham, *Champion*; Weybridge, *Billups*.

This insect bears a superficial resemblance to *Stygnus pedestris*, but its shining surface and pale whitish membrane would, I think, help anyone to know it at first sight.

ACOMPUS, Fieb.

Somewhat allied to the preceding genus but with much more prominent eyes, shorter basal joints of the antennæ, which hardly extend beyond the apex of the head for more than a quarter of their length, surface deeply punctured, without erect pubescence. Species dimorphic; in the developed form with the membrane as long as the apex of the abdomen, in the undeveloped with the membrane very short; legs simple, anterior femora unarmed. There is only one European species of this genus.

A. rufipes, Wolff.—Black, second and third antennal joints and legs testaceous, corium and clavus ochreous, the apex of the former and a spot at its inner apical angle brownish black. Head short, wide, deeply punctured; antennæ with the apex of the basal joint and the whole of the second and third testaceous; pronotum dull, very closely and largely punctured, trapeziform, sides nearly straight, carinæ narrow, base sinuate; scutellum dull black, deeply and closely punctured, its extreme apex pale; elytra with the corium and clavus deeply punctured, rather shining, membrane milky white, a slightly darker cloud down the

middle of each side; the abdomen very closely punctured, clothed with very short whitish hairs; legs testaceous, anterior femora sometimes with a dark central band.

L. 4 mm.

In damp places, Snodland and Chatham, Kent, New Forest, Wicken Fen, Horning, *Champion*; Redhill, Surrey, *J. Linnell*; Marshes, Norfolk, *Edwards*; Piddletown, Dorset, *Blatch*; Weybridge and Oxshott, *Billups*; Glanvilles Wootton, Dorset, Land's End, *Dale*.

STYGNUS, *Fieb.*

Closely allied to *Acompus*, but easily recognizable by the more finely punctured and the finely pubescent upper surface, and by the dull surface of the elytra, whose clavus has four series of punctures instead of only three as in *Acompus*; anterior femora beneath with a series of fine hairs, or spine-like bristles. One species, viz. *rusticus*, is dimorphous, the undeveloped form being the common one; the developed form is the *Stethotropis incana*, *Fieb.* We possess three out of the five recorded European species; *pygmaeus*, *Sahlberg*, which is closely allied to *arenarius*, but has a longer terminal joint to the antennæ, and is smaller in size, may yet be added to our list.

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| (2) | 1. Pronotum black or brown, not paler posteriorly | RUSTICUS. |
| (1) | 2. Pronotum paler at the base. | |
| (4) | 3. Legs clear testaceous throughout | PEDESTRIS. |
| (3) | 4. Legs with the femora brown | ARENARIUS. |

S. rusticus, *Fall.* (*incanus*, *Fieb.* (*macr.*).—Black or brown, clothed with short adpressed pale hairs, dull, closely punctured, legs and antennæ ferruginous, except the apical joint of the latter, which is black or brown. Head short, triangular; eyes prominent, projecting beyond the pronotum at its anterior angles; pronotum trapeziform, sides rounded in front and slightly sinuate behind the middle; base rather deeply sinuate; scutellum punctured like the pronotum; elytra with the corium and clavus rather more

finely punctured, and paler in some examples than the pronotum; membrane generally abbreviated, but in the developed form obscurely smoky, with paler nervures; legs with the anterior femora beneath bearing a row of fine bristle-like spines.

L. $3\frac{1}{2}$ –4 mm.

By sweeping, Reigate, Chobham; Hastings, *E. P. Collett*; Bexhill, Battle, Hurst Green, Ewhurst, Barnet, macropterous form frequent, *Butler*; Norfolk, *Edwards*; Caterham, *Champion*; Cheltenham, on heath, *Marshall*; near Whitstone, Devon, *Parfitt*; Barmouth, *Blutch*; Armagh, *Johnson*; Isle of Wight, September, plentiful on *Pulicaria*, *Douglas and Scott*; Hayling Island, Weybridge, *Billups*; Parley Heath and Glanvilles Wootton, Dorset, *Dale*.

S. pedestris, *Fall.* (*sabulosus*, *Schill.*).—Testaceous brown, somewhat shining, strongly punctured, clothed with rather long pale hairs; head, disc of the pronotum, scutellum, and apical joints of the antennæ and abdomen darker; head short, wide; eyes not very prominent, but projecting beyond the anterior angles of the pronotum; antennæ finely pilose, second and apical joints subequal in length, third slightly shorter; pronotum subtrapeziform, sides slightly sinuate, finely carinate, anterior margin not reflexed or raised, surface deeply punctured, rather less coarsely on the darker portion; scutellum dark, paler at the apex, deeply punctured; elytra with the corium and clavus punctured, irregularly clouded with darker brown; membrane pale smoky, slightly darker between the nervures; abdomen pitchy black; legs clear testaceous; anterior femora beneath with a few fine spine-like hairs.

L. $2\frac{1}{2}$ –3 mm.

Common and generally distributed in moss, at roots of grass, by sweeping, etc.

S. arenarius, *Hahn.*.—Dull reddish brown, clothed with very short pale adpressed hairs; head, basal and apical joints of the antennæ, pronotum in front, scutellum and

various spots on the elytra, the abdomen and femora, darker. In shape much like *pedestris*, but rather more parallel-sided and compact, its surface quite dull, the puncturation finer, the pronotum a trifle shorter, with the sides straighter and the base shorter in proportion to the anterior margin, giving it a more quadrate shape; elytra with the membrane smoky, the base and the nervures pale, showing rather vividly against the darker ground; legs with the femora dark except at the apex, anterior pair with a few stiff hairs along their underside.

L. 2-3 mm.

Common and generally distributed in moss, at roots of grass, etc.

PERITRECHUS, *Fieb.*

A genus of numerous species, most of which are so closely allied that it is doubtful whether they should be treated as distinct or only as races of one variable species. This condition of things exists also in *Scolopostethus*, and I have in this work given all the so-called species as distinct in both cases, without intending thereby to express my opinion that they really constitute species of equal value to those recognized in other genera, but in order that Hemipterists may have the opportunity of judging for themselves as to what they consider the value of a species in such genera.

Face triangular; eyes large, or medium-sized, projecting more or less beyond the pronotal angles; antenniferous tubercles angular at the sides, rostrum reaching to the intermediate coxæ; pronotum trapeziform, sides behind the middle narrowly foliaceous and pale, base sinuate; scutellum with a distinct central line; elytra with the membrane fully developed; legs with the anterior femora more or less incrassated, armed beneath with one or two fine spines; tibiæ simple, without bristles, or with a few on the inner apical margin of the posterior pair in *luniger*.

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| (2) 1. | Front femora with one spine, membrane with a distinct white apical spot | LUNIGER. |
| (1) 2. | Front femora with two spines, membrane without an apical spot. | |
| (4) 3. | Antennæ thinner, tibiæ entirely pale, eyes prominent | GRACILICORNIS. |
| (3) 4. | Tibiæ more or less dark. | |
| (6) 5. | Antennæ thinner, eyes less prominent, pronotum strongly transverse | NUBILUS. |
| (5) 6. | Antennæ thicker, eyes very prominent, pronotum less transverse, three-quarters as long as wide | GENICULATUS. |

P. luniger, *Schill.*—Head black, punctured; antennæ black, with the base of the second joint red; pronotum punctured, subtrapeziform, not so much widened posteriorly as in the other species, sides nearly straight, foliaceous and pale just behind the middle; disc black in front, widely ochraceous posteriorly, and punctured with black; scutellum black, punctured, with a smooth narrow dorsal line slightly raised at the base, apex narrowly pale; clavus and corium punctured with black in lines, the latter with the intervals between the nerves black posteriorly, leaving a small pale spot at the apex of each; external apical angle black; membrane dark fuscous, a spot at the base and apex, and the bases of the nervures near the outer angles white; abdomen black, clothed with fine golden pubescence; legs with the apices of the femora, and the front tibiæ except at the apex, reddish; front femora with a single tooth.

L. 4 mm.

Not uncommon, and from various habitats; in heaps of grass, Woking; at roots, Deal; in heathy places, Norfolk, *Edwards*; under saline plants Milford Haven, South Devon, Cornwall, *Marshall*; Knowle, Coleshill, *Blatch*; Hastings, Battle, Shalford, *Butler*; Morayshire, *Forres*; St. Ives and Scilly Isles, *J. E. Mason*; Dartmoor, *Parfitt*; Mickleham, Caterham, *Champion*; Oxshott, Surrey, *Billups*; Down-derry, Cornwall, *Bignell*; Parley Heath and Bournemouth, *Dale*.

P. nubilus, *Fall.*.—Rather paler in colour than the preceding. Head finely punctured; antennæ longer, entirely black; eyes not prominent; pronotum much widened posteriorly, nearly twice as wide as long in some ♀ specimens, sides narrowly reflexed, with a very small white patch behind the middle, surface punctured, black in front, posteriorly ochreous, with black punctures; scutellum black, with an impressed dorsal line, and a pale V-shaped spot at the apex; clavus with rows of black punctures, corium ochreous, irregularly punctured and spotted with black, leaving the nerves pale; membrane greyish brown, nerves and an indefinitely-shaped basal spot white; legs black; apices of the femora, the anterior tibiæ, and the apices of the other pairs, as well as the bases of all the tarsi, ferruginous.

L. 5–5½ mm.

Herne Bay, at roots of maritime plants in a salt marsh; Whitstable, Deal, Southend, *Champion*; Norfolk, *Edwards*; Penarth, South Wales, and Ashdown Forest, *Billups*.

P. gracilicornis, *Put.*.—Like the preceding, except that the head is strongly punctured, the eyes are larger and more prominent, the pronotum rather longer, and less widened posteriorly, and all the tibiæ and tarsi testaceous.

L. 5 mm.

Hastings, *Douglas*.

P. geniculatus, *Hahn.* (*puncticeps*, *Thoms.*).—Like the two preceding, but differing from both in the decidedly thicker antennæ; from *gracilicornis* also in having the bases of the second and third pairs of tibiæ dark, and in the slightly longer pronotum; and from *nubilus* in the large prominent eyes, strongly punctured head, and much longer pronotum.

L. 5 mm.

In rubbish, moss, dead leaves, at roots of grass, etc.,

Woking, Reigate; New Forest, Southend, *Champion*; Bexhill, *Butler*; Norfolk, *Edwards*; Headley Lane, Ashdown Forest, Cowbridge South Wales, *Billups*.

TRAPEZONOTUS, *Fieb.*

Species depressed, oval or oblong-oval. Head broad, across the eyes about equal to the width of the anterior margin of the pronotum; eyes not prominent, touching the pronotum; ocelli small and distinct; antenniferous tubercles small, not prominent at the sides; pronotum with the sides slightly rounded, very narrowly and evenly foliaceous throughout, base largely sinuate; scutellum rather large; elytra more or less rounded at the sides; membrane complete, or more or less shortened; legs with the anterior femora much incrassated, beneath with two spines and a series of bristly hairs.

Somewhat like *Peritrechus* in some respects, but easily known by the flatter, wider form and narrow foliaceous lateral margins of the pronotum.

There are six Palearctic species, of which we have three in this country.

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| (2) 1. | Legs without spiny hairs | DISTINGUENDUS. |
| (1) 2. | Legs with spiny hairs on the tibiæ. | |
| (4) 3. | Basal joint of posterior tarsi only slightly longer than the other two together . . | AGRESTIS. |
| (3) 4. | Basal joint of posterior tarsi nearly twice as long as the other two together. . . | ULLRICHI. |

T. distinguendus, *Flor. (distinctus, D. & S.)*.—Elongate oval. Head bronzy black, finely punctured, with a smooth impunctate line on each side of the central lobe; antennæ black, the centre of the third joint slightly reddish; pronotum flat, punctured, bronzy black in front, ochreous, punctured with black posteriorly, sides regularly but slightly rounded, margins very narrowly pale and foliaceous, base largely sinuate; scutellum black, with an ochreous V-shaped apical spot; elytra with the clavus and corium dull ochreous, punctured with black, the latter

more or less spotted and suffused with black towards the apex, membrane pale smoky brown, base and nervures white; abdomen bronzy black; legs with the femora black, their apices reddish; tibiæ and tarsi reddish brown; anterior femora beneath with two spines and several bristly hairs; all the tibiæ without erect bristles.

L. $3\frac{1}{2}$ –4 mm.

Rare and local; Worthing; Shoreham and Whitstable, *Champion*; Ventnor, *Lewis*.

T. agrestis, *Fall.* (var. *dispar*, *Stål*).—A much broader and shorter species than the preceding. Head black, antennæ entirely black, except in the ♂, which has the basal joint testaceous; pronotum with the sides very slightly sinuate, narrowly pale and foliaceous, base deeply sinuate, surface punctured, black in front, bright pale ochreous across the base, punctured with black; scutellum entirely black; elytra with the clavus and corium punctured with black in rows, the latter with a subquadrate spot near its inner apical angle, membrane black with the nervures white; abdomen black, a spot near each coxa and the posterior margin of the metasternum pale; legs, front pair in male testaceous, in ♀ with the femora more or less black, second and third pairs with the femora testaceous in the ♂ with a subapical black band, black in the ♀; tibiæ black or with the intermediate ones more or less rufescent; tarsi black.

L. 3–5 mm.

A large pale and brightly coloured form is known under the name of *dispar*, *Stål*, but I can really see no characters except colour and size to distinguish it by.

Common in many places at roots of grass, in rubbish, etc. Reigate, Woking, Deal; Norfolk, *Edwards*; Exmouth Devon, *Parfitt*; Folkestone, *Rye*; Morayshire, *Forres*, *O. M. Reuter*; Ireland, *Haliday*; Chobham and Chertsey, *Billups*; var. *dispar*, Darent Wood, *Douglas*.

T. Ullrichii, *Fieb.*—Larger than the preceding, and

more narrowed posteriorly, antennæ more slender, especially the apical joint, second joint pale especially beneath; entire surface rather more shining; pronotum less deeply sinuate posteriorly, its puncturation and that of the elytra finer and not so black, membrane narrower and paler; connexivum narrowly pale; all the tibiæ and tarsi and the apices of the femora testaceous; basal joint of the posterior tarsi very long, nearly twice as long as the other two together, front femora with two larger teeth and several very short ones.

L. 6 mm.

Cliffs near Boscastle, Cornwall, *Rev. T. A. Marshall.*

APHANUS, Lap.

(*Pachymerus*, Lep.; *Calyptonotus*, D. & S.)

This genus contains numerous species, differing considerably in facies and colour, which differences have given rise to several subgenera, the characters of which I have indicated in the table of species. It may be known from its nearest ally, *Beosus*, by the greater width of the pronotum in proportion to the head and the less prominent eyes, and from *Trapezonotus* by the long basal joint of the tarsi.

Head short, triangular, eyes touching or nearly touching the pronotum, face in almost the same plane as the vertex, except in *Rolandri*, in which it is distinctly more declivous; antenniferous tubercles only slightly developed, ocelli distinct; first joint of the antennæ projecting for about a quarter to half of its length beyond the apex of the face; pronotum wide, flat, its lateral margins foliaceous, either widely pale or very narrowly so or entirely black, more or less regularly rounded; scutellum large; elytra with the clavus variously punctured, membrane complete; legs, front femora spined, posterior femora simple or with a small spine near the apex in *predestris*, tibiæ bristly, or nearly smooth in *Rolandri*, basal joint of the posterior tarsi twice as long as the other two together. There are twenty-five

species given in Puton's Catalogue, of which we have five indigenous to this country.

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| (2) 1. Thorax entirely black, face more declivous, clavus irregularly punctured (Subg. <i>Calyptonotus</i> , Stål) | ROLANDRI. |
| (1) 2. Thorax not entirely black, face less declivous, clavus punctured in lines. | |
| (4) 3. The two external rows of punctures on clavus parallel and close together, scutellum with a pale V-shaped apical spot (Subg. <i>Graptopeltus</i> , Stål) | LYNCEUS. |
| (3) 4. The two external rows of claval punctures not parallel but divergent in the middle or near the apex (<i>Xanthochilus</i>). | |
| (6) 5. Sides of pronotum entirely and widely pale, membrane dark in the centre (Subg. <i>Xanthochilus</i> , Stål) | QUADRATUS. |
| (5) 6. Sides of pronotum not widely pale, membrane black or spotted (Subg. <i>Pachymerus</i> , Reut.). | |
| (8) 7. Legs yellow with black markings, posterior femora dentate at apex | PEDESTRIS. |
| (7) 8. Legs black; posterior femora simple | PINI. |

(SUBG. CALYPTONOTUS, *D. & S.*)

A. Rolandri, *Lin.*.—Black, dull, glabrous, punctured, a spot at the base of the membrane ferruginous. Head short, indefinitely punctured, eyes not touching the pronotum; pronotum flat, its sides depressed, foliaceous, slightly rounded, base deeply sinuate, disc punctured on its basal half; scutellum punctured; elytra with the corium and clavus irregularly punctured, the nerves sometimes brownish, membrane black with a reddish spot at its base; legs with a row of bristles on the inner sides of the tibiæ and a few finer ones on the outer; anterior femora with a strong triangular spine.

L. $5\frac{1}{2}$ –6 mm.

Darenth under refuse, *Douglas and Scott*; Dartford, Plumstead, *Champion*; Newton and Exeter, *Parfitt*; Portland, *Dale*.

(SUBG. GRAPTOPELTUS, *Stål.*)

A. lynceus, *Fab.*.—Broad, subovate, ochreous, punctured with black; sides of the pronotum pale, impunctate; head,

pronotum in front, scutellum, except a V-shaped apical spot, and a spot on the corium at its inner apical angle, black, the black spot having a small distinct whitish one at its apex; legs black, abdomen beneath with a pale spot near each coxa and the posterior margins of the pro- and metasternum ochreous. Head with the eyes touching the pronotum; pronotum with the sides rounded, base slightly sinuate; disc largely punctured across the base; scutellum punctured; clavus and corium punctured, the punctures arranged more or less in lines; membrane fuscous, more or less spotted and suffused with white; intermediate and posterior tibiæ bristly, anterior femora with a strong tooth near the apex in a row of small short ones, base of their tibiæ outwardly ferruginous.

L. 6-6½ mm.

In moss, Deal; Dartford Heath, *Scott*; Isle of Wight, *Pascoe*; Shirley, *Douglas and Scott*; Sandhills, Camber, *E. P. Collett*; St. Ives, Cornwall, *J. E. Mason*; Southend, New Forest, *Champion*; Hunstanton, *Fowler*; Margate, *Billups*.

(SUBG. XANTHOCHILUS, *Stål*.)

A. quadratus, *Fab.*—Elongate oval, ochreous, punctured with dark brown, sides of pronotum and corium impunctate. Head black, antennæ, first joint black its apex reddish, second and third dull red, darker at their apices, apical joint dark; pronotum with a quadrangular spot in front black, sides widely foliaceous, pale impunctate, base ochreous; scutellum black; corium with a somewhat elongate black spot on each side just above the membrane; membrane white with a brown central streak; abdomen black, a spot near each coxa and the posterior margin of the metathorax pale; femora black, their apices red; tibiæ reddish, their apices darker.

L. 5 mm.

Very rare, Llandudno.

(SUBG. PACHYMERUS, *Reut.*)

A. pini, *Lin.*.—Somewhat like *lynceus* in general colour, but more elongate oval. Head black, irregularly clothed with short adpressed golden hairs, eyes touching the pronotum, antennæ black; pronotum flat, with the lateral margins slightly rounded, very narrowly pale and foliaceous, base sinuate, disc in front black, behind ochreous, punctured with black; scutellum black, with a distinct slightly raised central line; corium and clavus ochreous, punctured with black, more or less in lines, a dark line on the clavus near the scutellum and a subquadrate spot near the inner apical angle of the corium black; membrane black; abdomen black, a spot on the prothorax beneath near its posterior angle, its posterior margin, the posterior margin of the mesosternum, and a spot near each coxa, ochreous; legs black, tibiæ finely spinose, anterior femora with two small teeth, close together, near the apex.

L. 7-7½ mm.

In sandy, heathy places, Woking, Chobham; Ewhurst, Gomshall, Chingford, *Butler*; Norfolk, *Edwards*; Poole, Dorset, *Blatch*; Bridgnorth and Edgbaston, *Marshall*; Shirley, East Grinstead, New Forest, *Champion*; Addington Hills, *Douglas and Scott*; Ashdown Forest, Taff's Well, South Wales, *Billups*; Bournemouth, Knighton Heath, Land's End, *Dale*.

A. pedestris, *Panz.*.—Bright ferruginous, with black and white markings. Head black, punctured, with a few long scattered hairs, eyes not touching the pronotum; antennæ black, the second joint and the extreme apex of the first testaceous; pronotum subtrapeziform, sides nearly straight, foliaceous, bearing a row of distant long hairs; base deeply sinuate, disc with a few scattered hairs, anteriorly black, posteriorly ferruginous, punctured with

brown, posterior angles black, a spot in front of them white; scutellum black, corium and clavus ferruginous, punctured with brown, a line down the centre of the latter, and the former outwardly and apically white, with a round black spot near the apex, membrane black, white at the apex; abdomen black; posterior margins of the thoracic segments beneath pale, abdomen beneath clothed with fine hairs; legs testaceous, a band at the apex of each femur, the apex of the anterior tibiae, the base and apex of the others and all the tarsi at the apex black; anterior femora with a strong spine towards the apex and two smaller ones on its proximal side, intermediate and posterior femora with a small tooth close to the apex.

L. 5-6 mm.

Not common, Chobham, running among dead leaves, etc., on a dry sandy bank; dead leaves, Ashford, Kent, *Marshall*; not uncommon under bark of whitethorns, etc., Norfolk, *Edwards*; Colchester, Walton-on-Naze, Croydon, *Blutch*; Stoke Wood, Devon, *Parfitt*; Gravesend, Southend, Lee, Darenth, Chatham, *Champion*; Cardiff, *Billups*; Portland, *Dale*.

BEOSUS, Am. S.

(*Dieuches* D. & S., *Saund. etc.*)

Allied to *Aphanus*, but easily distinguished by its narrow form, the prominent eyes, which project beyond the anterior margin of the pronotum, and the longer, thinner basal joint of the antennæ.

There are three European species, of which we have only one in Britain.

B. luscus, Fab.—Elongate pale ochreous, punctured and spotted with black. Head black, clothed with a silvery adpressed pubescence, eyes not quite touching the pronotum, antennæ, first joint black, pale at the extreme base, second and third ochreous, black at the apex, fourth black, ochreous at the base; pronotum with the sides very slightly

curved, widely foliaceous and raised, ochreous and impunctate; a large subquadrate spot on the front of the disc black and clothed with silvery pubescence, except a spot on each side of its centre, which is glabrous; the disc posteriorly is ochreous, punctured with black, posterior angles black; scutellum black with a pale line on each side of the apex; elytra with the clavus and corium ochreous, punctured with black, a large band near the apex and the apical margin of the latter black; abdomen black, clothed with silvery hairs, posterior margin of the pro- and metasternum and a spot near each coxa pale; legs ochreous, femora with a broad black band, anterior pair with a sharp tooth beneath.

L. 6-6½ mm.

This beautiful insect is generally rare, I have found it near the Land's End and at Dawlish, Devon. The *Rev. T. A. Marshall* observes, "Rather common on the Cliffs of Milford Haven, under tufts of *Silene maritima*, on which it appears to feed; by searching the same plant on the Cornish coast, I have found two or three here;" St. Ives, Cornwall, *J. E. Mason*; Whitsand Bay, near Plymouth, *J. J. Walker*; Parley Heath, *Dale*; Bridgend, South Wales, *Billups*; Portlemouth, Wembury, *Bignell*.

EMBLETHIS, *Fieb.*

A genus easily known by its uniform pale ochreous black-punctured surface and bristly legs and antennæ. Head short, eyes touching the pronotum, antenniferous tubercles obtuse laterally, first joint of the antennæ scarcely extending beyond the apex of the face; pronotum broad, flat, sides widely foliaceous; elytra with the sides slightly rounded; legs and antennæ bristly, the anterior femora beneath with a row of very short spine-like hairs.

There are nine recorded Palæarctic species.

E. verbasci, *Fab.*—Oval, ochreous, finely and closely

punctured with brown, margins with larger black punctures more or less grouped. Head with a few short bristles, especially near the apex of the central lobe; rostrum piceous, antennæ obscure ochreous, bristly; pronotum broad, flat, anterior margin and base slightly sinuate, sides slightly rounded, largely foliaceous and punctured with large black punctures, disc finely punctured with brown; scutellum finely punctured, with two little brown spots near each basal angle; elytra, clavus and corium finely punctured, the latter with its sides foliaceous and punctured with large black punctures more or less grouped; membrane pale, with brown clouded spots; abdomen reddish ochreous, connexivum spotted with black, thoracic segments beneath black, the posterior margins of each and the anterior margin and centre of the prosternum pale ochreous, as well as a spot near each coxa; legs, femora spotted with brown, tibiæ bristly, posterior metatarsus more than twice as long as the other two joints.

L. 6 mm.

Very rare. Sandhills, Deal.

EREMOCORIS, Fieb.

A very distinct genus, of closely allied species, which has been carefully studied by Dr. Horváth, and its difficulties ably cleared up.

Head rather long, antenniferous tubercles distinct, basal joint of the antennæ extending beyond the apex of the face for more than half its length; eyes not touching the pronotum; anterior margin of the pronotum deeply sinuate somewhat raised, sides sinuate or rounded, disc laterally impressed behind the middle; sides of the elytra slightly rounded, membrane usually complete; anterior femora incrassated, toothed beneath, their tibiæ more or less curved; mesosternum bituberculate or simple. Puton gives seven European species, of which we have three.

- (2) 1. Basal joint of posterior tarsi more than twice
as long as the second and third together . . . FENESTRATUS.
(1) 2. Basal joint of posterior tarsi not twice as long
as the second and third together.
(4) 3. Mesosternum bituberculate, hairs of tibiae
shorter, not at right angles to the tibiae . . . PODAGRICUS.
(3) 4. Mesosternum simple, tibial hairs longer, erect . . . PLEBEIUS.

E. fenestratus, *H. Schf.* (*erraticus*, *D. & S.*; *podagricus*, *Saund. Synops.*).—Head and pronotum black, somewhat shining, shallowly punctured, nearly glabrous, the latter brown across the base, where it is more largely and deeply punctured, sides slightly rounded, foliaceous, pale, especially behind the middle, posterior angles black, base deeply sinuate; scutellum black, punctured, depressed at the base, slightly carinated at the apex; elytra long, nearly parallel-sided, with the clavus and corium punctured, more or less ochreous at the base, reddish brown towards the apex, with a roundish black spot near the centre; membrane dark fuscous, a spot near the apex of the corium and one opposite to it and the basal angle white; abdomen black, connexivum and apex paler and reddish, posterior margins of the pro- and metasternum pale as well as a spot near each coxa; legs, femora black, paler at the extreme apex, tibiae obscure ochreous, with a few erect hairs on the posterior pair, anterior femora with a strong central tooth arising from a row of smaller ones, their tibiae curved; posterior metatarsi a good deal more than twice as long as the other two joints together.

L. 7 mm.

Reigate, under Junipers; Caterham, Mickleham, Chatham, *Champion*; Dartmoor, *Parfitt*; Croydon and Hunstanton, *Blatch*.

E. podagricus, *Fab.*—Shorter and broader than the preceding; elytra distinctly shorter and with its sides more rounded; pronotum more trapeziform, with its sides sinuate, surface dull, clothed with semi-erect pubescence, coloured much as in *fenestratus*, only the colours rather brighter;

scutellum, clavus and corium clothed with fine semi-erect pubescence like the pronotum, the scutellum black, the clavus and corium ochreous at the extreme base, more or less mottled with black and brown, no distinct central spot, membrane dark fuscous, a small transverse spot on each side and the nervures pale; legs clothed with fine semi-erect hairs, anterior femora with two longer spines, their tibiæ much curved, mesosternum with a tubercle in front of each coxa, largest in the ♂.

L. 5-6 mm.

Littlington, Cambridge, under dead leaves at the bottom of a hedge, *J. A. Power*.

E. plebeius, *Fall.*—Very like an obscurely coloured *podagricus*, the hemelytra being entirely of a uniform brown, paler at the base, with a very small black spot near the centre, membrane dark with three paler spots at the base; mesosternum simple, tibiæ, especially the posterior pairs, with long erect hairs as well as the shorter semi-erect ones.

L. 5-6 mm.

Forres, *G. Norman*; Taff's Well, *Billups*.

SCOLOPOSTETHUS, *Fieb.*

About this most difficult genus a great deal has been written, and different authors have put value on different classes of characteristics as affording specific distinctions. Mr. Edwards relies on the colour of the antennæ, etc., as offering stable characters, and on the form of the genital styles in the ♂. Dr. Horváth relies on the form of the pronotum, the pubescence of the surface and the development of the membrane; he admits the value of the form of the styles, but thinks it unnecessary to employ a character so difficult to examine. Personally I attach little value to colour when it is a question between testaceous and black, as it is in this genus, as I feel convinced that an unusually rapid passage through the pupal or nymph state

tends to impede the development of black. This, I feel little doubt, is the explanation of the red-bodied forms of *Andrena* in the Hymenoptera, occurring more commonly in hot dry summers than in cold damp ones; and in the genus now under consideration, one species at least, *S. neglectus*, varies in the amount of black on the second antennal joint. I have specimens with a broad black band at the apex, others with a very narrow one; and why others should not occur without a band at all I fail to see. On the form of the styles in the ♂ I place great value, but I can only detect differences between three of the forms of style I have examined, and the differences which exist between these appear to me to be traceable to modifications of a common form; at the same time, they are distinct enough for practical use, and therefore should not be put aside. Grouping them by the form of the styles, I should unite *affinis* and *grandis*; *puberulus* and *neglectus*; *decoratus* remaining distinct; of *pictus* the style has not been examined. The characters of the form of the pronotum and membrane seem to me most unreliable, as both these vary in form correlatively with the development of the wings; and to be certain that a pronotal difference between any two of these insects is reliable, one must be certain that the wings are equally developed in both, a position very hard to obtain. As an instance of variability of the length of the membrane in the brachypterous form, I may mention that I have one example of *puberulus*, Horv., in which the membrane projects beyond the apex of the corium by about half its diameter, and I have another, in which it hardly projects beyond the apex of the corium at all, and yet both were taken in the same batch, and are clearly identical. After very careful consideration, I feel no doubt that all the so-called species are races of one, still they are recognizable as a rule, and therefore I give them; other characters may yet present themselves to distinguish them apart more satisfactorily.

The genus may be thus characterized: Head with the eyes not quite touching the pronotum, and not contracted behind them, eyes rather prominent, antenniferous tubercles not produced laterally, face triangular, sharply pointed in front, the central lobe much longer than the cheeks, basal joint of the antennæ extending beyond the apex of the head for about a third of its length; rostrum reaching to the intermediate coxæ; pronotum more or less trapezoidal in most cases, but nearly square in others, this character varying with the development of the wings; lateral margins more or less sinuate, pale and foliaceous just behind the middle; elytra developed, with the membrane full and reaching beyond the apex of the abdomen, or with it curtailed, exhibiting the terminal segments; legs with the anterior femora incrassate, bearing a large spine beneath and a series of small ones between it and the apex; mesosternum simple, or with two tubercles in front of the coxæ, long and curved in the ♂, short in the ♀.

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| (2) | 1. Antennæ longer, pale throughout, large tooth of anterior femora situated about the middle | PICTUS. |
| (1) | 2. Antennæ shorter, rarely pale throughout, large tooth of the anterior femora nearer the apex than the middle. | |
| (6) | 3. Mesosternum tuberculated in front of the intermediate coxæ. | |
| (5) | 4. Pronotum wider posteriorly, membrane in the undeveloped form scarcely produced beyond the apex of the corium | AFFINIS. |
| (4) | 5. Pronotum narrower posteriorly, membrane in the undeveloped form produced for at least half the length of its diameter beyond the apex of the corium | PUNCTATUS. |
| (3) | 6. Mesosternum simple. | |
| (8) | 7. First and second joints of the antennæ longer, surface more distinctly pilose | TUBERULUS. |
| (7) | 8. First and second joints of the antennæ shorter, surface glabrous, or scarcely pilose. | |
| (10) | 9. First and second joints of the antennæ pale, except the apex of the second; almost always undeveloped and slightly pubescent | NEGLECTUS. |
| (9) | 10. First and second joints of antennæ black, except the extreme base of second; almost always developed, and practically glabrous | DECORATUS. |

S. pictus, *Schill.*—Head black, with a few large punctures; antennæ entirely testaceous, long and slender; pronotum trapezoidal in the developed form (I have never seen a brachypterous one), anterior margin very narrowly constricted, red, sides very slightly sinuate, pale, widely foliaceous and pale behind the middle, posterior angles brown, base sinuate; disc black in front, ochreous, punctured with brown posteriorly, with a brown cloud on each side of the pale baso-dorsal line; scutellum black; elytra with the corium and clavus ochreous, punctured with brown in lines, a broad band at the apex of the corium, a spot on its lateral margin, and a dark line just within the latero-discal nerve, dark chocolate brown; membrane milky white, nervures brown; legs testaceous, anterior femora with the large tooth situated about its middle, between which and the apex is a row of small, very fine ones, tibiæ curved, in the ♂ considerably, with a few denticulations near the apex inwardly.

L. 5 mm.

Rare. Horning Fen, *Brewer*; Littlington, Cambridgeshire, February, *Power*; Glanvilles Wootton, July, and Charmouth, *Dale*.

S. affinis, *Schill.* (*adjunctus*, *D. & S.*).—Like the preceding in general colour and pattern, but with the antennæ shorter and thicker, the third and fourth joints black; the membrane often undeveloped, and the wings curtailed, the membrane being scarcely produced beyond the apex of the corium, and the pronotum in consequence being narrower posteriorly; the anterior femora with the large tooth nearer the apex, and with a broad black band; posterior femora also occasionally with a black apical ring; mesosternum beneath with two curved horn-like tubercles, in the ♂ blunt at the apex, in the ♀ with two small raised points.

L. 4–4½ mm.

Common in rubbish, by sweeping nettles in summer, etc.

S. grandis, *Horv.* (*punctatus*, *Edu.*), differs from the

preceding in having the antennæ with the second joint pale at the base, and gradually darkened to the apex; in having the pronotum in the undeveloped form wider anteriorly and consequently squarer; and in having the membrane more produced, the part produced beyond the apex of the corium being half as long as the diameter of the membrane; the mesosternal tubercles are as in *affinis*, and I can see no difference between the forms of the genital styles in the two species.

L. $4\frac{1}{2}$ mm.

Woking, under rubbish, and Chobham; probably elsewhere, but overlooked.

S. puberulus, *Horv. (adjunctus, Edw. nec D. & S.)*.—Like all the others in pattern, but with the metasternum simple in both sexes, the first and second antennal joints entirely pale, and longer than in most of the forms; the surface clothed with fine short hairs, observable chiefly near the hind angles of the pronotum and on the exterior portion of the corium; legs pale, front tibiæ rather less curved in both sexes than in the three preceding; in this species the blade of the genital style is distinctly broader towards the apex than in the two preceding.

L. 4 mm.

Norfolk, *Thouless*, and Bexhill, *Butler*; Oreston, *Bignell*.

S. neglectus, *Edw. (affinis, Saund. Synops.)*, differs from the preceding in having the apex of the second joint of the antennæ more or less black, and the first and second shorter and rather thicker at the apex, and with the pubescence of the surface shorter (I only know the undeveloped form); posterior femora with a black ring; genital styles as in *puberulus*.

L. $3\frac{1}{2}$ –4 mm.

Not uncommon by sweeping, etc., but rarer than *affinis*.

S. decoratus, *Hahn. (ericetorum, Leth.)*.—Quite glabrous and with the antennæ black except at the base of the second joint; nearly always developed, I have only seen one other-

wise; prosternum less strongly punctured at the sides than in the other species, femora with a black ring at the apex.

L. $3\frac{1}{2}$ –4 mm.

Common and generally distributed on heaths.

NOTOCHILUS, Fieb.

Closely allied to *Scolopostethus*, but readily recognized by the shape of the head, the eyes being remote from the pronotum, and the head narrowed behind them into a short neck; surface deeply punctured; pronotum with a deep central impression; lateral margins narrowly reflexed; scutellum with a distinct basal impression; front femora strongly toothed.

N. contractus, H. S.—Black, a small pale spot on each side of the pronotum; corium and clavus dull ochreous, the apical two-thirds of the former brown, with a small pale spot outwardly; membrane greyish-brown, pale at the base, the nervures darker. Head closely and deeply punctured; antennæ with the first joint extending for more than half its length beyond the apex of the face; pronotum twice as wide at the base as at the anterior margin; sides sinuate, narrowly pale and reflexed, the reflexed portion wider behind the middle; disc with a wide central longitudinal impression; scutellum deeply punctured, impressed rather deeply at the base; elytra punctured on the corium and clavus; abdomen black; legs dark brown; anterior femora incrassated, with a row of many teeth beneath, including two much stronger and longer than the rest.

L. $2\frac{1}{2}$ –4 mm.

Generally distributed and common by sweeping among nettles, in rubbish, moss, etc.

N. limbatus, Fieb. (*crassicornis*, D. & S.).—Ferruginous; head and front of pronotum fuscous, extreme base and hind angles of latter also dark; antennæ basal joint red, the rest black, except the base of the second and apex of fourth;

elytra with a broad band across the middle, interrupted by the claval suture and the discal nerve, and the apical margin narrowly black; membrane dusky, with a pale streak on each side along the margin of the corium; legs red, apices of the femora narrowly black; segments of the thorax beneath pitchy. Head rugosely punctured; antenniferous tubercles rounded and shining; basal joint of the antennæ elongate, as long as the second, second and third considerably widened at the apex, fourth about equalling the third in length; pronotum not much widened behind, sides slightly sinuate, surface rugosely punctured; disc more or less raised on each side, leaving a broad somewhat impressed dorsal line; scutellum punctured, with an elevated line at the apex; elytra punctured in lines on the clavus, and with a line of punctures along the claval suture of the corium, disc with hardly visible punctures; abdomen smooth and shining, with only very fine scattered punctures; anterior femora much incrassated, with a row of fine spines towards the apex, with a larger one in their centre; those on the proximal side of the large one smaller than the others; thoracic segments beneath rugosely punctured.

L. $3\frac{1}{2}$ –4 mm.

Southsea, May, 1870, one ♂, *Moncreaff*; Bewdley Forest, in a sandy place, margin of Dowles Brook, July, 1879, *Blatch*.

I have two Continental specimens of this species, in both of which the black band of the elytra is widely interrupted, and in one it is only faintly indicated, so that this character must be regarded as variable.

DRYMUS, *Fieb.*

(*partim* = *Lamproplux*, *D. & S.*)

Short, oval, or oblong. Head with the eyes and ocelli touching or not quite touching the pronotum; antenniferous tubercles large, rectangularly produced laterally; rostrum

reaching to the intermediate coxæ; antennæ with the apical joint shorter than the second; pronotum with the sides slightly sinuate, narrowly reflexed, base very slightly sinuate; scutellum impressed; elytra with the sides more or less rounded; membrane generally complete; legs with the front femora toothed.

All the species are of a brown colour, and unspotted. Puton records nine European species, of which we have five.

- (8) 1. Pronotum dull, punctured anteriorly.
- (5) 2. Tibiæ without projecting hairs.
- (4) 3. Pronotum entirely black, much widened posteriorly SYLVATICUS.
- (3) 4. Pronotum brown at the sides and posteriorly, not much widened behind BRUNNEUS.
- (2) 5. Tibiæ with long projecting hairs.
- (7) 6. Abdomen beneath dull, closely punctured PILIPES.
- (6) 7. Abdomen beneath shining PILICORNIS.
- 1) 8. Pronotum anteriorly shining, impunctate, or nearly so PICEUS.

D. sylvaticus, *Fab.* (var. *Ryei*, *D. & S.*).—Short, oval, black, closely punctured; hemelytra brown, or ochreous-brown. Head with the eyes not quite touching the pronotum, strongly and rugosely punctured; antennæ finely pilose, apical joint subequal to, or hardly longer (var. *Ryei*) than the third; pronotum transverse, widened posteriorly, sides very slightly sinuate, strongly and very closely punctured; disc with a transverse depression near the middle; scutellum punctured like the pronotum, or rather more largely and remotely, var. *Ryei*; corium and clavus punctured, ochreous-brown, with a few darker stains, or reddish-brown, var. *Ryei*; membrane smoky, nervures slightly paler, or darker with the base pale, and sometimes shortened, var. *Ryei*; beneath black, finely pubescent; anterior tibiæ with a small spine.

L. 4-4½ mm.

Common in moss, dead leaves, rubbish, etc., and generally distributed; var. *Ryei* less common and well marked as a variety. In *Scolopostethus* it would rank as a species.

D. brunneus, *Sahlb.*—Less regularly oval than the preceding, the pronotum being narrower, and the elytra wider posteriorly, with more rounded sides; the apical joint of the antennæ is longer than the third, and pale at the apex; the eyes are more remote from the pronotum, and the face rather longer; the pronotum is brown posteriorly, with the side margins pale and more deeply sinuate and less divergent; elytra of a brighter brown, pale at the base, and generally with a pale spot on the corium near the claval suture; membrane dusky, nervures pale; legs brown.

L. 4 mm.

Common, though not generally so common as *sylvaticus*, in similar localities, and with an equally wide range.

D. pilipes, *Fieb.*—Much larger than either of the preceding and more elongate, resembling a *Rhyparochromus* in shape more than a *Drymus*; head, pronotum, and scutellum black; side margins of pronotum, the elytra, and legs brown; elytra pale ochreous at the base. Head with the eyes not touching the pronotum, punctured; antennæ with long projecting hairs; pronotum trapeziform; lateral margins slightly sinuate, surface deeply punctured, with a slight transverse discal impression; scutellum largely punctured with a strong basal impression; elytra with the clavus and corium punctured, the latter pale ochreous at the base; membrane pale, nervures slightly darker; abdomen black, dull; apex piceous, clothed with fine hairs, and finely punctured; legs brown, femora darker, anterior pair with a strong tooth and several small ones between it and the apex, their tibiæ strongly curved; all the tibiæ with long erect hairs.

L. 5–5½ mm.

Rare, Betchworth, Surrey, on a willow tree; Stoke Hill, Devon, *Purfitt*; Mickleham and Chobham, *Billups*.

D. pilicornis, *Muls.* (*latus*, *D. S.*).—Rather like the preceding, and of the same elongate form, with similarly

pilose antennæ and tibiæ ; but the pronotum is more narrowed in front in the ♀, and brown across the base in most specimens ; the scutellum is less strongly impressed at the base, and the corium is unicolorous throughout, and of a brighter redder brown ; the membrane is dark fuscous, paler at the inner angle ; the abdomen beneath is smooth and shining ; and the femora are clear testaceous brown, like the tibiæ ; anterior femora less strongly curved.

L. 5-5½ mm.

Hurst Wood, Caterham and Sheppey, *Champion* ; in moss, Weybridge, *Billups*.

D. piceus, *Flor.*—Unlike any of the preceding, shining, almost glabrous, testaceous brown ; head, pronotum in front, and underside darker. Head with a few fine punctures ; antennæ clothed with fine hairs, with the basal joint and apex of the fourth clear testaceous, the rest darker ; pronotum subquadrate, deeply and largely punctured posteriorly, convex, pitchy brown and shining anteriorly, the rather widely reflexed lateral margins and basal half testaceous brown ; scutellum pitchy brown, the basal impression finely punctured, the sides very coarsely so ; apex with a central carina ; corium and clavus punctured, the latter in rows, the former irregularly, with a smooth impunctate space along the outer margin and near the centre, between which and the claval suture are two parallel rows of punctures ; membrane dusky, sometimes more or less shortened ; legs clear testaceous, intermediate and posterior tibiæ with a few short bristly hairs, anterior femora with two fine spines.

L. 4 mm.

Rare, at roots of plants at Gracious Pond, Chobham ; in moss in Broadwater Forest, near Tunbridge Wells ; Wimbledon, *Rye* ; Scarborough, *Lawson* ; Dublin Loch, near Thornhill, Dumfries, *Sharp* ; Deal, at a ditch side by sweeping, Headley Lane in a swamp, *Billups*.

GASTRODES, Westw.

A genus at once known by its very wide and very flat shape; the head is small; the eyes and ocelli almost touch the pronotum; the rostrum reaches beyond the posterior coxæ; the pronotum is flat, with narrowly foliaceous sides, much widened posteriorly; the scutellum is equilateral; the elytra are much widened from the base to about their centre; the membrane is entire; the meso- and metasternum are very strongly furrowed; the anterior femora very much incrassated, finely serrated beneath, with a strong subapical tooth followed by several small ones outwardly; anterior tibiæ much bent at the base; basal joint of the tarsi subequal to the other two taken together.

We have both the European species in this country. They occur on *Conifers*.

- (2) 1. Lateral margins pale only posteriorly FERRUGINEUS.
 (1) 2. Lateral margins of pronotum pale throughout their length ABIETIS.

G. ferrugineus, Linn.—Obscure testaceous red, head and front of pronotum and scutellum black. Head deeply punctured; antennæ entirely rufescent, basal joint extending for nearly half its length beyond the apex of the face; pronotum with the lateral margins black in front, slightly sinuate, base largely sinuate, surface largely punctured all over, dull, with a rather deep transverse impression behind the middle; scutellum punctured all over; elytra with the clavus and corium punctured; membrane dark smoky; abdomen red, thoracic segments beneath black; posterior margin of pro- and metasternum red, as well as a spot near each coxa; legs red, anterior femora much incrassated, serrate beneath, with a strong tooth near the apex; tibiæ much curved at the base.

L. 6-6½ mm.

Not rare on Scotch firs, but local, Woking; Aviemore, Esher, *Champion*; Leominster, *J. J. Walker*; Birch Wood,

and wood near Leicester, *Marshall*; Hunstanton, Isle of Wight, Essex, *Blatch*; Norfolk, *Edwards*; Hurst Green, Battle, Mickleham, *Butler*; Dawlish, *Parfitt*; Morayshire, Forres, *Norman*; Ireland, *Haliday*; Headley Lane, Weybridge, *Billups*; Glanvilles Wootton, *Dale*.

G. abietis, *Linn.*—Like the preceding in form, but rather narrower; the basal joint of the antennæ shorter, scarcely extending beyond the apex of the head; the third and fourth joints and the apex of the second are black; the side margins of the pronotum are pale throughout, more broadly foliaceous, especially behind the middle; the surface of the anterior portion of the pronotum is more finely and remotely punctured and shining; the scutellum has a shining smooth line down each side; the corium and clavus are pale ochreous at the base and along the inner margin of the former, which is of a more reddish tint outwardly and apically, with an oblong longitudinal spot near the inner apical angle; membrane dusky, with two paler basal spots; anterior femora less incrassated than in *ferrugineus*, and the bases of the tibiæ less bent.

L. 6–6½ mm.

Rare. In cones of spruce fir, Woolmer, *Wollaston*; Merton Park, Norfolk, *Edwards*; Newnham, Gloucestershire, *Fowler*; Burton, *J. Harris*; Worcester, *Blatch*; Nunton, near Salisbury, *Marshall*; Perthshire, Pitlochry and Forres, *Norman*; under bark of spruce fir, Chobham, *Billups*.

PYRRHOCORINA.

PYRRHOCORIS, *Fall.*

A genus known at once by its bright red and black colour and the absence of ocelli. The membrane in our British species is rarely developed.

There are ten species given as Palearctic by Puton, most of which are of southern distribution.

P. apterus, *Lin.*.—Above flat oblong ovate, bright scarlet, punctured. Head, disc of pronotum, scutellum, a round spot in the centre of the corium, a very small one near its base and the membrane black, this last usually abbreviated; abdomen black; connexivum and apex of sixth segment red; basal genital segment red beneath; thoracic segments beneath black, their posterior margins and the anterior margin of the prosternum red; a spot near each coxa red; legs and antennæ black.

L. 8 mm.

Torquay, Teignmouth, "in abundance, 1865," *Parfitt*; Barmouth Sands, *Blatch*; Cowbridge and Taff's Well, South Wales, *Billups*.

TINGIDIDÆ.

A family of small, mostly oval-shaped, species, peculiar by the very large puncturation or reticulation of the upper surface, the integument is often very thin, and more or less membranous; the membrane is punctured or reticulated much like the rest of the elytra, and the clavus is wanting, except in *Piesma*. Another strongly-marked character is the great length of the third joint of the antennæ, and the shortness of the second; the ocelli are absent, except in *Piesma*; and the scutellum is covered, except in that genus, by the long angularly produced base of the pronotum; anterior coxæ inserted at the base of the prosternum; the tarsi are two-jointed; the rostrum is three-jointed, received when at rest into a deep channel, formed by the under margins of the cheeks and elevated ridges on the pro- and mesosternum, and sometimes also on the metasternum.

There are two subfamilies, which may be thus characterized:—

- | | |
|--|------------|
| 1. Scutellum visible, clavus defined, membrane defined, ocelli present | PIESMINA. |
| 2. Scutellum covered, clavus and membrane undefined, ocelli wanting | TINGIDINA. |

PIESMINA.

PIESMA, *Lep.*

(*Zosmenus*, *Lap.*).

A genus whose position is somewhat doubtful, as it wants several of the more pronounced characters of the *Tingididae*, and yet differs from the *Lygaeidae* in others; it makes a sort of link between these families, and as it is generally classed with the *Tingididae* I have left it there. It may be known from all the other genera by its exposed scutellum, its distinct clavus and membrane, its ocelli, and the form of the cheeks, which are produced in front into distinct horn-like processes.

There are fifteen species given by Puton, but many of them are very closely allied, and some may possibly not retain their specific value.

- (2) 1. Pronotum with three keels anteriorly . . . QUADRATA.
 (1) 2. Pronotum with two keels anteriorly . . . CAPITATA.

P. quadrata, *Fieb.*—Pale dull greyish ochreous, more or less spotted with small darker spots, or uniformly ochreous. Oval, head rugose, with a spine in front of each eye, and the cheeks produced, the processes bent, and converging at the apex; antennæ with the basal joint very thick, the second slightly narrower and shorter, the third very long and thin, the fourth about equal to the first in length and the second in width; pronotum very strongly punctured, sides dilated and foliaceous in front, showing several rows of fine meshes, slightly rounded; base nearly straight; disc raised posteriorly, with a deep transverse channel in front, which is traversed by three fine carinæ; scutellum small, raised, pale, and tuberculate at the apex; elytra with the corium and clavus punctured like the pronotum; membrane hyaline, with four parallel nervures; legs ochreous.

L. $2\frac{1}{2}$ –3 mm.

Common in many places, especially on the coast, on

Chenopodium, and other maritime plants, in salt marshes, etc. Ireland, *Huliday*.

P. capitata, *Wolff* (var. *Laportei*, *Fieb.*).—Like the preceding, but narrower; the pronotum sinuate, sometimes deeply, at the sides, in front with only two carinæ; the scutellum rather larger, not tuberculate and pale at the apex; elytra often with very distinct black spots, sometimes quite unicolorous.

I quite fail, after careful examination, to be able to accept *Laportei*, *Fieb.*, as a species. Dr. Puton distinguishes it by the larger anterior lobe of the pronotum, showing three rows of meshes at the sides, and the spotted elytra. In my specimens some have three rows of meshes in the anterior sides of the pronotum, some two, some one. Some of those with only one have the elytra quite as darkly spotted as those with three. I have both forms from the same localities; as I can see no satisfactory character to distinguish them, I do not hesitate to unite them, at any rate, until some satisfactory difference can be found. The shape of the genal processes also varies greatly.

L. $2\frac{1}{4}$ – $2\frac{1}{2}$ mm.

Occurs not infrequently by sweeping, etc., and is generally distributed.

TINGIDINA.

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|------|----|---|---------------|
| (2) | 1. | Sides of pronotum obtuse, elytra simple . | SERENTHIA. |
| (1) | 2. | Sides of pronotum strongly carinated,
elytra with its sides foliaceous and
reticulated. | |
| (10) | 3. | Channel, in which the rostrum lies, open
in front. | |
| (5) | 4. | Pronotum simple in front, anterior margin
emarginate . | CAMPYLOSTIRA. |
| (4) | 5. | Pronotum with a more or less raised hood
or process on the anterior margin. | |
| (7) | 6. | Antennæ slender, second joint not rugose,
much narrower than the apical one . | ORTHOSTIRA. |
| (6) | 7. | Antennæ more or less robust, or with the
second joint rugose. | |
| (9) | 8. | Disc of elytra flat, nerves only raised . | DICTYONOTA. |

- (8) 9. Disc of elytra raised on each side to meet
the central nerve DEREPHYSIA.
(3) 10. Rostral channel closed in front. . . . MONANTHIA.

SERENTHIA, Spin.

(*Agramma*, D. & S.)

A very distinct genus, by its long shape and the obtuse sides of its pronotum; the head is rounded and obtuse, with strong antenniferous tubercles, the third joint of the antennæ slightly tapers to its apex, and is about equal in length to the first and second together; rostral canal very large, closed in front; the pronotum is elongate, with the sides straight, the anterior margin emarginate and raised, the base produced in a long acute angle over the scutellar region; elytra with fine mesh-like punctures; membrane indistinct.

There are six European species, of which *femoralis*, *Thoms.*, is quite likely to occur here; it may be known by its larger size, more distinct membrane, and polygonal meshes.

S. læta, Fall.—Small, oblong, three times as long as wide. Head and pronotum black, the former simply punctured, the latter with large, mesh-like punctures; anterior margin and basal angle pale; disc with an elevated dorsal line throughout its entire length; elytra pale ochreous, simple, without dorsal carinæ, closely punctured with round mesh-like punctures; abdomen black; legs testaceous; apical joint of the tarsi black; edges of the cheeks beneath, which form the sides of the rostral canal, pale, as well as the posterior margin of the metasternum, a spot near each coxa, and a ring round the orifice of the odoriferous sac.

L. $1\frac{1}{2}$ mm.

Not rare but local, by sweeping grass, June to September, Reigate, Chobham, Woking, Herne Bay; Deal, Norfolk, *Edwards*; Dunston Common, Coleshill, Clacton,

Bournemouth, *Blatch*; Fairlight, on heath, *Butler*; Sheppey, Whitstable, *Champion*; Tunbridge Wells, *Douglas and Scott*; Penarth, South Wales, *Billups*; Lulworth, Hodd Hill, *Dale*.

CAMPYLOSTIRA, Fieb.

The very small species which represent this genus may be easily known by the emarginate anterior margin of the pronotum, which bears no hood or central projection; the head has two strongly-marked obtuse antenniferous processes; the antennæ have the first and second joints short and stout, nearly as wide as long, the third very long, the fourth about as long as the first and second together, narrow at its base, widening into a club towards the apex; rostral channel open in front; pronotum short, its sides nearly straight, and reticulated, disc with three keels; elytra without distinct membrane, sutures not parallel, membranous, with longitudinal subparallel nerves extending to the apex, the intervals with irregular meshes.

There are four well-known European species mentioned by Dr. Puton in his Catalogue, and two doubtful ones.

C. verna, Fall. (*brachycera, Fieb.*).—Small, elongate oval, brownish, elytra transparent, reticulated. Head testaceous brown, dull, antennæ with the terminal joint dark at its apex; pronotum with the sides nearly straight, with two rows of meshes in front, and one behind, anterior margin emarginate, base produced in an obtuse angle over the scutellum, disc tricarinate, largely punctured, its lateral carinæ not reaching the anterior margin; elytra with irregular meshes, divided into series by three strong longitudinal veins; between the exterior vein and the lateral margin is one row of very small meshes (these are only visible from a sideways view), between the central vein and the exterior are two rows, between the central and interior

three, and between the interior and the suture, one ; beneath and legs testaceous.

L. $1\frac{1}{2}$ mm.

In moss, &c. ; Reigate, Ilfracombe ; Caterham, Hampstead, Mickleham, Chatham, *Champion* ; Weybridge, Glanvilles Wootton, Dorset, *Dale* ; and Oxshott, *Billups*.

Dr. Puton has seen an example in which the sutural series of meshes is widened at the apex into two and three series, which he thinks may prove to be the developed state of this species.

ORTHOSTIRA, Fieb.

(*Acalypta*, Westw.)

Species small, depressed or slightly convex, surface with fine meshes ; rarely developed—the developed form of *parvula*, the only one I am acquainted with, resembles a *Monanthia* in shape, and quite departs from the short, almost rotundate form of the undeveloped specimens. Head with the vertex bearing two spines, eyes large granulated ; antennæ, basal joint very thick, second very short, third very elongate, fourth distinctly thicker than the third ; rostral canal open anteriorly, its sides areolated ; pronotum with a distinct hood on the centre of the anterior margin, disc with three areolated carinæ, sides reticulated ; elytra reticulated, with strongly-raised longitudinal carinæ.

There are fifteen species given in Puton's Catalogue, of which most are of southern distribution ; *gracilis*, Fieb., however, occurs in Sweden, and may probably yet be found with us. The characters below are from the undeveloped forms of the species.

- | | | |
|--------|---|----------|
| (2) 1. | Pronotum with only a central keel . . . | BRUNNEA. |
| (1) 2. | Pronotum with three keels. | |
| (4) 3. | Margins of the elytra with two rows of
meshes throughout . . . | CERVINA. |
| (3) 4. | Margins of the elytra with only one row of
meshes. | |
| (6) 5. | Lateral discal carinæ touching the hood . . | PARVULA. |

- 5) 6. Lateral discal carinæ abbreviated, not touching the hood.
 (8) 7. Sutural area with three rows of meshes NIGRINA.
 (7) 8. Sutural area with two rows of meshes . MACROPHTHALMA.

O. brunnea, *Germ.* (*concinna*, *D. & S.*).—Pale greyish ochreous, elytra spotted with black. Head black, forehead with two short pale spines, antenniferous processes testaceous, as also the antennæ except the terminal joint, which is black; genal laminae very finely areolated; pronotum with the anterior margin produced in the centre into an areolated hood, from the apex of which a strong carina extends to the base of the pronotum, sides rounded, widely reflexed, with three rows of meshes, base produced in an obtuse angle; elytra irregularly spotted with black, sutural area with two rows of meshes, discoidal with about six, lateral with four or five, marginal with two varying to three at the apex; abdomen dark brown; legs testaceous.

L. 2 mm.

Rare, in moss, &c., Scarborough, *Wilkinson*; Darent Wood, *Douglas and Scott*; Redhill, Surrey, *J. Innell*; New Forest, *Champion*; Church Stretton, Barmouth. *Blatch*; Armagh, near Cookstown, co. Tyrone, *Rev. W. F. Johnson*; Horsley, Surrey, *Billups*; Glanvilles Wootton, Dorset, *Dale*.

O. cervina, *Germ.*.—Pale testaceous. Head brown, with four pale spines, two being frontal processes, the other two the antenniferous tubercles; antennæ testaceous, apical joint black, genal laminae finely areolated, the rostrum reaching to beyond the posterior coxæ, all the sterna bearing strong laminae for its reception; pronotum with three longitudinal keels, the central one raised in front, and cresting the hood of the anterior margin, lateral margins with three to four rows of meshes, base obtusely angulated; elytra, sutural area with two rows of meshes, discoidal with four, lateral with three to four, marginal with two; legs testaceous.

L. $2\frac{1}{4}$ mm.

Not common, in moss, &c. Reigate, Knowle, *Blatch*; Shirley, Caterham, *Champion*; Fifeshire, *Power*; Coombe Hurst, Croydon, *Douglas and Scott*; Glanvilles Wootton, Dorset, and High Bickington, Devon, *Dale*.

O. parvula, *Fall.*—The smallest of our species, dull grey or, if immature, more or less testaceous. Head black, with two short paler frontal spines or processes, antenniferous tubercles obtuse, antennæ testaceous, apical joint black, third suddenly enlarged at the extreme base; pronotum with three longitudinal keels, the central one cresting the largely-developed elevated and areolated hood of the anterior margin, sides with two rows of meshes, base produced into an acute angle—the angle longer and more acute in the developed form; elytra, sutural area with one row of meshes at the base, increasing to two, three, four, as it approaches the apex, or expanding in the developed form into a regular finely reticulated membrane, with five to seven rows of meshes across its widest part, discoidal area with five to six rows in the middle, lateral four to five, marginal with one, or just at the base, with two; abdomen brown; legs testaceous.

L. $1\frac{1}{4}$ mm. brach., $2\frac{1}{4}$ mm. macr.

The macropterous form is quite unlike the brachypterous in shape, and in general appearance resembles a *Monanthia*.

Common and generally distributed, found in moss at the roots of grass in sandy places, etc.

O. nigrina, *Fall.*—More convex than either of the preceding, grey. Head black, with two short blunt spines on the forehead, antennæ with the third joint very slightly and gradually widened towards the base and paler than the others; pronotum with the anterior margin produced and hooded, sides rounded, with two to three rows of meshes, base produced in an obtuse angle, disc with three areolated carinæ, the central one extending to the front margin and cresting the hood, the lateral ones abbreviated;

elytra with three rows of meshes on the sutural area, four to five on the discoidal, four on the lateral, and one along the margin; legs with the tibiæ testaceous.

L. $2\frac{1}{4}$ mm.

Aviemore, *Champion*; Morayshire, *O. M. Reuter*.

O. macrophthalma, *Fieb.*—Very like the preceding, but differing in having the third joint of the antennæ parallel-sided throughout, not widened at all at the base, and the elytra with two rows of meshes on the sutural area.

L. $2\frac{1}{4}$ mm.

Cheviot, *Hardy*.

DICTYONOTA, *Curt.*

This genus contains some of our most beautiful species; they may be easily known by their thick rugose antennæ, the second joint of which is as thick or thicker than the apical. Head with two spinose frontal processes, and the antenniferous tubercles more or less spinosely produced, rostral channel open in front, its sides largely and distinctly areolated; antennæ with the third joint rugose, and more or less hairy; pronotum with three keels, lateral margins widely foliaceous, especially in front, and areolated, anterior margin with a central hood, base with a long angular production; elytra flat, with strongly-raised costæ, largely reticulated between them. In the ♂ the antennæ have the third joint distinctly longer than in the ♀. There are fourteen species given by Puton, of which we have only three, but all the others are southern in their distribution.

- (2) 1. Third and fourth joints of the antennæ with long hairs CRASSICORNIS.
 (1) 2. Third and fourth joints of the antennæ without long hairs.
 (4) 3. Second joint of the antennæ black and thick STRICHNOCERA.
 (3) 4. Second joint of the antennæ testaceous, slender FULIGINOSA.

D. crassicornis, *Fall.*—Greyish black, head black, with two converging frontal spines, the antenniferous tubercles

produced into a slightly curved lateral spine, antennæ with the third and fourth joints very rugose, and with long erect hairs; pronotum, disc black, shining, punctured, with three elevated longitudinal carinæ, each when viewed laterally with a row of large meshes, central one terminating in an elevated somewhat globular areolated vesicle, the front margin of which forms the anterior margin of the pronotum; sides very widely transparent and reticulated, especially in front, with three to five rows of meshes; base angularly produced and reticulated; elytra reticulated, greyish, with the nerves black; abdomen black, legs testaceous.

L. $3\frac{1}{4}$ mm.

Generally distributed, but not common anywhere; Ireland, *Haliday*; not recorded from Scotland.

D. strichnocera, *Fieb.*—Like the preceding at first glance, but abundantly distinct in many points. The head bears two short flavous carinæ, one just behind each eye on its inner side, the antenniferous tubercles are blunt, and there are two pale frontal spines, not convergent, the third joint of the antennæ is much thicker than in *crassicornis*, but the hairs are adpressed and very short, the apical joint is much thinner than the third; the pronotum is paler in colour in the ♀, being almost white posteriorly, the sides are less widened in front and more rounded, with two to three rows of meshes, the hood of the anterior margin smaller and less globular; the elytra are very similar to those of *crassicornis*, but the nerves are paler in the ♀, and the reticulation less regular in both sexes.

L. $3\frac{1}{2}$ mm.

On broom and furze, common in many places, and generally distributed, but not recorded from Ireland.

D. fuliginosa, *Cost. (Fieberi, D. ♂ S.)*.—Larger and paler than either of the preceding, head black, with two white carinæ near and above the eyes, two pale subparallel frontal spines, and strongly produced but blunt antenniferous processes, antennæ testaceous, apex of the terminal joint black,

third joint very long and slender, compared with those of the preceding species, very rugose and with very short hairs; pronotum with the sides much dilated in front, as in *crassicornis*, where they have three to four irregular rows of large meshes, posteriorly they have two, base longly produced, reticulated at the apex; elytra rather elongate, the sides slightly sinuate, irregularly reticulated, the nerves testaceous, in places darker; abdomen brown; legs testaceous.

L. $4\frac{1}{2}$ –5 mm.

On old broom bushes, Weybridge.

DEREPHYSIA, Spin.

Integument very thin and membranous, reticulated, the meshes very large. Head punctured; eyes very large; antenniferous processes blunt; antennæ slender, finely hairy, and rugose; rostral channel open in front, its sides finely areolated; pronotum largely reticulated, the central keel terminating in front in a large crested hood, which almost covers the head; lateral margins widely dilated and reticulate; elytra with very large meshes, the discoidal and lateral areas raised to meet the central nerve.

There are two European species, of which we have only one.

D. foliacea, Fall.—Nervures of the meshes pale testaceous, between the nervures the surface is quite shining, transparent, and hyaline, with iridescent reflections; antennæ testaceous, finely rugose, and shortly hairy; apical joint black at the extremity; sides of the pronotum dilated and much raised, with two rows of large meshes behind and three in front; disc with three carinæ, with a row of meshes in each, the central one the highest; hood with large meshes; nervures more or less finely hairy; elytra very largely meshed, the disc of each raised down the centre; abdomen and legs testaceous.

L. $3\frac{1}{2}$ mm.

This lovely little species is far from rare, and is generally distributed; it occurs in ivy, moss, etc.

MONANTHIA, *Lep.*

A genus all of whose species have a sort of common facies, and yet differ in strong structural peculiarities, which have given rise to several well-marked sub-genera, which in some other families would be treated as generically distinct. As characters belonging to the whole genus the following may be given:—

Rostral channel closed in front, i.e. the laminal production of the cheeks beneath are united in front; anterior margin of the pronotum with a more or less distinct hood; pronotum, on its basal half at least, with three keels, its base produced into a long acute angle; elytra with the internal nerve distinctly angulated just at the side of the apex of the base of the pronotum; surface reticulate, or very largely and reticulately punctured.

There are fifty-five species given in Puton's Catalogue, and others have been added since: these are nearly all of southern distribution.

- (7) 1. Sides of the pronotum flat and foliaceous,
more or less rounded and dilated with
rows of clear areolæ (Subg. *Platycheila*,
Fieb.).
- (6) 2. Lateral margins of pronotum not pilose.
- (4) 3. Sides of pronotum with two and three,
elytra with three rows of meshes CARDUI.
- (3) 4. Sides of pronotum with one row, of elytra
with two rows of meshes ANGUSTATA.
- (3) 5. Sides of pronotum and elytra with four rows
of meshes AMPLIATA.
- (2) 6. Lateral margins of pronotum and elytra
pilose CILIATA.
- (1) 7. Sides of the pronotum not dilated and
rounded.
- (9) 8. Sides of pronotum straight, or slightly
sinuate, narrowly reflexed, costate (Subg.
Catoplatus, *Spin.*) COSTATA.

- (8) 9. Sides of pronotum more or less inflated, the inflations reticulate.
 (15) 10. Orifice of the odoriferous sac with a distinct channel (Subg. *Physatochila*, *Fieb.*).
 (14) 11. Disc of pronotum with three carinæ, reaching to the hood of the anterior margin.
 (13) 12. Elytra with three to four rows of marginal meshes in the middle . . . QUADRIMACULATA.
 (12) 13. Elytra with two rows of marginal meshes in front, one posteriorly. . . DUMETORUM.
 (11) 14. Lateral discal carinæ abbreviated anteriorly by the lateral inflations . . . SIMPLEX.
 (10) 15. Sac orifice without a canal (Subg. *Monanthia*, *Stål*). . . HUMILI.

(SUBG. PLATYCHILA, *Fieb.*)

M. ampliata, *Fieb.* (var. *similis*, *D. & S.*).—A large wide species, grey or ochreous grey, more or less mottled with black. Head black, with woolly white pubescence; vertex with three long pale spines, forehead with two long converging pale spines, terminal joint of the antennæ black; pronotum with the anterior margin raised, and hooded in the centre, lateral margins very widely dilated, especially in front, and raised, with four rows of fine meshes; disc with three not very much elevated carinæ, the central one only showing distinct areolæ at its base and apex; elytra flat, finely reticulated, with four rows of fine meshes at the sides; abdomen black-brown, legs ochreous; the depressions of the upper surface in fresh examples are filled with a sort of woolly white pubescence, and the nervures bear very short adpressed hairs, visible only with a strong power.

L. $3\frac{1}{2}$ –4 mm.

The var. *similis*, *D. & S.*, has the pronotal margins less dilated in front.

Not rare; by sweeping, Reigate, Woking, Chobham, Wimbledon, Hayling Island, Hastings; Battle, Barnet, *Butler*; Bugbrooke, Northampton, *Marshall*; Sand-hills,

Lincolnshire, *Mason*; Tilgate, Wicken, Esher, Chatham, New Forest, Cowes, *Champion*; Lee, Chislehurst, Brighton, Oxon, *Douglas and Scott*; Cowbridge South Wales, Ely, *Billups*; Glanvilles Wootton, *Dale*.

M. ciliata, *Fieb. (reticulata, H. Sch.)*.—Somewhat of the same wide build as the preceding, and similar in colour; but abundantly distinct from it and all our other species, by the long ciliae of the sides of the pronotum and elytra, antennæ, legs, and nervures. Head black, with a short pale hairy spine above each eye, a central one on the vertex, and one just below it on the forehead; apical joint of the antennæ black; pronotum, anterior margin angularly raised and hooded in the centre, sides much dilated, widest near the middle, with three and a half rows of large meshes; disc with three carinæ without areolæ, central one raised in front and cresting the hood; elytra finely reticulate on the disc, the sides with three rows of large meshes; abdomen black; legs ochreous.

L. 4 mm.

Rare, Monkswood, Huntingdon, *Crotch*; Scarborough, *Lawson*; Tilgate, Cobham Park, *Champion*; Glanvilles Wootton, Dorset, *Dale*.

Dr. Puton gives its habitat as in the flowers of *Ajuga reptans*.

M. cardui, *Linn.*.—Greyish, with darker mottlings. Head black, with silvery downy pubescence, with a tubercular spine on the vertex, and two converging frontal spines, pale; second and third joints of the antennæ pale; pronotum, anterior margin raised and hooded, projecting slightly over the head, sides rounded posteriorly, reflexed, with three rows of meshes posteriorly and two anteriorly; the nerves black in places; disc with three strong areolated carinæ, the central one cresting the hood, the lateral ones interrupted by it; elytra flat, finely reticulated, the nerves in places black; lateral margins with three rows of meshes; the dark mottlings of the elytra form a more or less definite

band across their centre; abdomen black; legs with the femora black at the base.

L. $3\frac{1}{4}$ mm.

Very common on thistles, and generally distributed.

M. angustata, *H. Schff.*—Paler and narrower than the preceding, to which it is closely allied, but from which it may be known at once by the narrow marginal reflection of the pronotum, which has only one row of meshes, and the less elevated discal carinæ, the lateral ones of which show no areolæ; the margins of the elytra also are narrower, with only two rows of meshes, and there is scarcely any darker mottling on the nerves; but this may vary, as I have seen very few continental examples, and have only the one British specimen; all I have seen, however, agree in coloration.

L. 3 mm.

One specimen by sweeping, near Cisbury, Worthing.

(SUBG. CATOPLATUS, *Spin.*)

M. costata, *Fieb.*—A species very distinct by the narrow, sinuate margins of the pronotum. Pale testaceous; head brown, with two convergent frontal spines, and a small one adpressed to the surface above them; antenniferous tubercles angularly produced, apical joint of the antennæ dark; pronotum with the anterior margin very short, raised into a slightly elevated hood, sides nearly straight or slightly sinuate, narrowly reflexed, with one row of small meshes; disc with three longitudinal carinæ, the central one cresting the hood; elytra much wider than the pronotum, with fine meshes, sides rounded, with three rows of meshes; abdomen black.

L. $3\frac{1}{2}$ – $4\frac{1}{2}$ mm.

Reigate; Tunbridge Wells, Caterham, Chattenden, *Champion*; Folkestone, *Rye*; Bewdley, Trench Woods, Cannock Chase, *Blatch*; Langport, Somerset, *Dale*; Bushey, Herts, *Power*; Headley Lane, Margate, Deal,

Taff's Well South Wales, *Billups*; Glanvilles Wootton, Dorset, *Dale*.

(SUBG. PHYSATOCILA, *Fieb.*)

M. quadrimaculata, *Wolff*.—Dark brown ♂, or pale chocolate-brown ♀; sides of the elytra with a white spot at the base and near the apex. Head black, a curved adpressed spine lying along the inner margin of each eye, a short central one on the vertex, and two converging frontal spines, pale; antennæ slender, ferruginous, apical joint black; pronotum with a rather high hood on the anterior margin, sides nearly straight, lateral inflation narrow, parallel-sided, with three rows of honeycomb-like cells or meshes; disc with fine meshes and three longitudinal carinæ; these do not exhibit any clear areolæ, central carina cresting the hood; elytra flat, finely meshed, sides rounded in front, subsinuate posteriorly, with three to four rows of irregular small meshes in the central dark portion, and with two rows of large clear meshes in the basal and sub-apical clear spots; abdomen brown; legs ferruginous.

L. 3–3½ mm.

On old apple-trees; Ewhurst, *E. A. Butler*; Brockenhurst, *Douglas*; New Forest, *Fowler*; Glanvilles Wootton, *Dale*; Weston-super-Mare, *Billups*; Oreston, *Bignell*.

M. dumetorum, *H. Schff.*.—Very like the preceding, but smaller and narrower: the lateral inflations of the pronotum with only two rows of cells or meshes; elytra with the margins narrow, with two rows of small meshes at the sides in front, as well on the dark as on the clear portions, and one row of larger meshes behind.

L. 2–2¼ mm.

On old whitethorns; Chobham; Esher, Ashtead, Darenth, New Forest, *Champion*; Norfolk, *Edwards*; Redgrave Fen, *Blatch*; Well Vale, Lincolnshire, *J. E. Mason*; Glanvilles Wootton, *Dale*; Lee, Kent, Southampton Common abundant, *Douglas*; Woking, Oxshott, Cardiff, *Billups*.

M. simplex, *H. Schff.*—Somewhat convex, ferruginous, head and abdomen and thoracic segments beneath black. Head with an adpressed spine lying along the inner margin of each eye, a spine on the vertex, and two converging frontal spines ferruginous; antennæ with the apex of the terminal joint black; pronotum with the anterior margin hooded, sides with large inflations, their inner margins rounded, and almost meeting in the centre, just leaving room for the central carina to run between them, but interrupting the lateral ones; elytra subconvex, with fine cellular meshes throughout, the lateral margin with a single narrow row of fine clear meshes; legs ferruginous.

L. 3 mm.

Rare; Redhill, Surrey, *J. Linnell*; Folkestone, Darenth, Chatham, New Forest, *Champion*; Isle of Wight, *Power*; Bexley, Kent, *Scott*; Bickleigh Woods, *Bignell*.

(SUBG. MONANTHIA, *Stål.*)

M. humuli, *Fab.*—Greyish ochreous. Head black, punctured, with two very short pale convergent frontal spines; antenniferous tubercles obtuse; pronotum with the anterior margin hardly raised or produced in the middle, and therefore forming a very feeble hood, sides with large wide inflations, bearing four rows of cell-like meshes, their inner margins emarginate and subparallel to the lateral margins; disc reticulated, with three longitudinal carinæ, the central one entire, with its basal apex black, and the lateral ones interrupted by the inflations; elytra finely reticulated, flat, lateral margins with two rows of meshes at the base, one in the centre, two in the subapical sinuation, and one at the apex; nerves of the elytra with a distinct black spot at the apex of the discoidal area, and another on the central nerve, near its centre; many of the lateral reticulations are also black; abdomen black; legs ochreous.

L. 4 mm.

On *Myosotis*, etc., in damp and swampy localities, and margins of ponds; Woking, Ilfracombe; Norfolk, *Edwards*; Coleshill, Sutton Park, *Blatch*; Hastings district, Shalford, *Butler*; Tilgate, Wimbledon, New Forest, *Champion*; Cowbridge, South Wales, *Billups*; Glanvilles Wootton, *Dale*; Perth, *B. White*.

ARADIDÆ.

A family of few genera, of which we have only two in this country, which occur under bark, in fungoid growths, etc. It is allied to the *Tingididæ* in many respects, but differs from it in the general form, the large scutellum, the position of the anterior coxæ, which are inserted in the disc of the prosternum and not at its base, and the absence of reticulation or cell-like puncturation; the antenniferous tubercles are large and angular, or spine-like, the cheeks are very short, and the central lobe of the face forms an elongate blunt process; ocelli absent; the antennæ are short and rugose, and the rostrum variable in length, very short in *Aneurus*; the pronotum transverse; the elytra produced and rounded at the shoulders; tarsi two-jointed.

- | | | | |
|-----|----|---|----------|
| (2) | 1. | Flat, pronotum with longitudinal keels, scutellum angulated | ARADUS. |
| (1) | 2. | Very flat, pronotum without keels, scutellum rounded | ANEURUS. |

ARADUS, *Fab.*

Flat, surface finely rugose; eyes prominent, head contracted behind them; antenniferous tubercles spine-like; antennæ thick, joints truncate at the apex; rostrum longer than the head; sides of the pronotum in our British species reflexed, foliaceous, and more or less ragged; the scutellum is long, with its sides raised; the elytra are dilated at the base, the sides converging in sinuate lines so as to leave the connexivum uncovered; the apical margin of the corium is more or less angularly emarginate; the membrane is large, reaching almost to the apex of the abdomen; the connexivum

is dilated, wide, and foliaceous; legs small and thin; beneath, all the segments of the thorax have a narrow central channel, the abdominal segments all more or less shortened and emarginate in the middle of the posterior margin; the fifth strongly emarginate, raised in the centre, sixth with its centre apparently hidden under the fifth in the ♀; three genital segments visible in the ♀, one in the ♂.

There are a great number of European species in this genus. Puton gives as many as fifty-four as palæarctic in his Catalogue, but we have only four recorded from this country.

- | | | | |
|-----|----|--|-------------|
| (6) | 1. | Not entirely black. | |
| (3) | 2. | Second joint of the antennæ longer than the third and fourth together | CORTICALIS. |
| (2) | 3. | Second joint of the antennæ not nearly so long as the third and fourth together. | |
| (5) | 4. | Lateral margins of the pronotum broadly white in front. | DEPRESSUS. |
| (4) | 5. | Lateral margins of the pronotum dark throughout | LAWSONI. |
| (1) | 6. | Entirely black | ATTERIMUS. |

A. corticalis, *Linn.*.—Brown, finely and granulately rugose; central lobe of the face very long; antenniferous tubercles long and acute; antennæ with the second joint longer than the third and fourth together, third pale at the apex, fourth silver-haired at the apex; pronotum with the anterior angles not produced, lateral margins jagged, narrowly reflexed, and diverging rapidly in front, largely rounded, reflexed, and dilated posteriorly, base deeply sinuate across the scutellum, disc with four longitudinal ridges and a longitudinal tubercle near each posterior angle; scutellum with its margins raised; elytra pale and dilated at the base, then narrowed, so as to show the apex of the first abdominal segment, their nerves strongly raised; the posterior margin of the corium with a rectangular notch just below the scutellum; membrane smoky brown;

connexivum with paler lines at the apices of the segments; legs brown; apices of the femora slightly paler.

L. 7–8 mm.

Rare; under bark, etc., New Forest; West Wickham, Kent, *Douglas and Scott*; Parley Heath, *Dale*.

A. Lawsoni, *Saund.*—Like the preceding in colour, but rather shorter; the antenniferous tubercles rather less divergent and sharp; antennæ with the third joint entirely dark, subequal in length to the second; anterior angles of the pronotum slightly produced forwards, lateral margins broadly reflexed throughout, very slightly jagged, base very slightly sinuate across the scutellum; scutellum narrower than in *corticalis*, with its sides more strongly raised, its disc transversely rugose; elytra much dilated at the base, the dilatation much larger than in *corticalis*, mottled with pale ochreous, and covering the basal segment of the abdomen entirely and half of the second; membrane more widely rounded at the apex; notch in the apical margin of the corium less distinct, and farther from the apex of the scutellum; terminal segment of the abdomen with a bilobate white spot; abdomen brown beneath; legs pale ochreous, the femora at the base and a band across each tibia darker.

L. 7 mm.

One specimen, without locality, from Mr. Lawson's collection.

A. depressus, *Fab.*—Differs from either of the preceding by the pale spot at the anterior angles of the pronotum and the testaceous red or pale brown abdomen. Head brown; antennæ shorter than in either of the preceding, with the third joint a trifle shorter than the second, fourth joint with silvery hairs at the apex; pronotum with the anterior angles produced; lateral margins widely reflexed, and jagged; base nearly straight; disc brown, with four keels as in the other species; the reflexed lateral margins anteriorly, for about half their length, white;

scutellum brown; elytra whitish, dilated at the base, the dilatation covering the first and two-thirds of the second abdominal segments; nerves brown towards the apex; membrane smoky white at the base, and more or less reticulated with white throughout; abdomen red-brown, with a whitish spot at the base of each segment of the connexivum; legs pale ochreous.

L. 5-6 mm.

Not rare; under bark, on old stumps, etc.; Reigate, Coombe Wood, Woking, Bromley; Darenth Wood, Packwood Park, Warwickshire, Abergavenny, *Marshall*; Salford Priors, Malvern, Tonbridge, New Forest, *Blatch*; Well Vale, Lincolnshire, *J. E. Mason*; Hastings, Guestling, Battle, *Butler*; Chatham, Sevenoaks, Loughton, Caterham; *Champion*; Cardiff, *Billups*; Glanvilles Wootton, Dorchester, *Dale*.

A. aterrimus, *D. & S.*—Deep black. Head with the antenniferous tubercles acute, the points turned slightly inwards; antennæ thin, second joint not quite so long as the third and fourth together, third three-quarters the length of the second, fourth half the length of the third; pronotum with the side margins narrow, but rounded at the anterior angles, widening posteriorly, sinuate in front of the posterior angles; posterior margin slightly sinuate; disc with four keels, and an oblong tubercle near each posterior angle; scutellum long, narrow, side margins much raised, apex obtuse; elytra not much dilated at the base, with strongly raised nerves; connexivum with a yellow angular spot at the posterior angle of each segment; legs, femora black, tibiae and tarsi rather paler.

L. 6 mm.

One ♀ specimen, "Darenth Wood, among chips on the stump of a felled oak, 30th May, 1861, *Douglas*; another, ♂, from *Mr. J. H. Harding's* collection, without note of its locality," *Douglas and Scott*.

ANEURUS, *Curt.*

Very flat, comparatively smooth. Head with a narrow neck, then suddenly widened to a width not quite equal to the anterior margin of the pronotum, angulated behind the eyes; eyes slightly prominent; antenniferous tubercles rectangular; central lobe of the face elongate, rounded and narrowed in front; antennæ with the joints more or less rounded at the apex; pronotum widely transverse; scutellum large, and rounded posteriorly; elytra almost entirely membranous, the corium and clavus being scarcely definable, and indicated only by a very short coriaceous basal portion; apex of the membrane broadly and truncately rounded; wings short; connexivum wide and flat; genital segments in the male projecting beyond the apex of the connexivum, in the ♀ two visible from above; legs short, femora slightly incrassated.

A very curious genus, of which we possess the only European species. It occurs under bark, and is the flattest species found in this country.

A. lævis, *Fab.*—Pitchy brown; antennæ, legs, and abdomen rather paler. Head wrinkled transversely on the vertex; antennæ with the first joint oval, the second about equalling it in length, but thinner, the third about once and a half as long as the second, the fourth about once and a half the length of the third; pronotum with the anterior margin sinuate, the disc deeply and transversely impressed, base nearly straight; scutellum transversely wrinkled, semicircular; membrane lying closely adpressed to the abdomen, smoky brown; connexivum widely extended beyond the membrane on each side, dull; the abdomen beneath the membrane with a very shining line down each side and down the centre.

L. 5 mm.

Reigate, Bromley; Fairlight, *Butler*; Bath, *Blathwayt*; Bridgenorth and Darent Wood, *Marshall*; Bewdley

Forest, *Blatch*; Caterham, Chatham, *Champion*; Chobham, Oxshott, Weybridge, and Mickleham, *Billups*.

HEBRIDÆ.

The position of this little family has always been a matter of some doubt, but its relation to the *Hydrometridæ* seems to me to be the closest; and as Dr. Puton in his Catalogue places it in front of that family, I have adopted the position he assigns to it. In habits the family may be called sub-aquatic, as its members are found amongst *Lemna*, in marshes, and in *Sphagnum*, etc., and are clothed beneath with the fine silvery, silky pubescence observable on the undersides of *Gerris*, etc., which appears to be impervious to water. In form short. Head with the face declivous; eyes large, round, with very large facets; ocelli small, situated between them; face wide; the antenniferous tubercles situated far in front of the eyes, and rather low down on the side of the head, largely developed, rounded; antennæ five-jointed; the sixth joint, mentioned by Messrs. Douglas and Scott, appears to me to be only the extreme, narrow, base of the third; rostrum four-jointed, received into a canal under the head and thorax; pronotum trapezoidal; scutellum triangular; elytra with the clavus submembranous; membrane without nerves; coxæ widely separated, especially the posterior pair; tarsi two-jointed, claws at the apex of the tarsi; two genital segments visible in the ♂, three in the ♀.

HEBRUS, *Curt.*

As there is only one genus in the family the characters given above will be sufficient to identify it.

1. Basal joint of antennæ projecting for half its length beyond the apex of the head PUSILLUS.
2. Basal joint of antennæ scarcely projecting beyond the apex of the head RUFICEPS.

H. pusillus, *Fall.*—Short, blackish brown. Head rather remotely punctured, with a whitish tinge along the inner

sides of the eyes, centre slightly impressed; antennæ testaceous, finely pilose, first joint as long as the third, slightly curved, extending for more than half its length beyond the apex of the head, second about two-thirds as long as the first, fourth about as long as the second, fifth rather longer; pronotum black or brown, punctured, much widened posteriorly, slightly constricted before the middle, with a wide central channel in front, and a small fovea on each side; posterior angles rounded, base slightly produced and rounded; scutellum black; elytra with the clavus submembranous, white at the base, corium brown, clothed with very short golden hairs; membrane very large, smoky, with a white spot on each side, and a longitudinal median streak near the apex; connexivum slightly reflexed; legs testaceous, posterior femora slightly curved.

L. $1\frac{1}{2}$ mm.

On *Lemna*, in *Sphagnum*, etc., Plumstead; Isle of Wight, *Lewis*; Southgate, *F. Walker*; New Forest, Birmingham, *Blatch*; common in very wet moss, Norfolk, *Edwards*; Portland, *Dale*; Canning Town, Rainham, Essex, *Billups*.

H. ruficeps, *Thoms.*—Dimorphous, and differing from the preceding in having the basal joint of the antennæ much shorter, scarcely projecting beyond the apex of the head, in the paler reddish head and pronotum, the unspotted membrane, and the undefined basal spot on the base of the clavus. In the only developed specimen before me, from Mr. Billups' collection, the whole clavus is white, and the corium has a pale central line. In the undeveloped form the pronotum is less widened posteriorly, and the elytra are reduced to two small straight lobes, with a small membranous dilatation on their inner margins, hardly longer than the scutellum.

L. $1\frac{1}{2}$ mm.

In *Sphagnum*, Chobham; in swarms in *Sphagnum*, Loughton, Essex, October, 1884, one specimen developed, *Billups*; Perth, *O. M. Reuter*; Cannock Chase, *Blatch*.

HYDROMETRIDÆ.

This family is composed of various genera, some of which seem to me to have very little in common; they may, however, all be said to be subaquatic. *Æpophilus* is perhaps the most aberrant, its contiguous coxæ and Lygæid antennæ giving it an aspect quite foreign to the other members of the family. *Mesovelia*, again, has almost contiguous coxæ, but the antennæ are very different from those of *Æpophilus*. The extraordinarily produced face of *Hydrometra* is utterly unlike that of any other of our genera; they, however, have a few features in common; they all have the elytra of one texture throughout, and undivided into corium, clavus, and membrane, and the underside clothed with white silvery pubescence, which is no doubt impervious to water, and are destitute of odoriferous sacs. The habits of *Æpophilus* and *Mesovelia* are at present very little known; the former is a submarine species, occurring under stones, etc., below high-water mark. *Mesovelia*, according to Sahlberg, occurs on the leaves of *Nymphaea*, *Potamogeton*, etc. The other genera of the family live on the surface of the water. The members of this family are carnivorous.

TABLE OF SUBFAMILIES.

- | | |
|---|---------------|
| (4) 1. Coxæ contiguous or nearly so, scutellum visible. | |
| (3) 2. Ocelli absent | ÆPOPHILINA. |
| (2) 3. Ocelli well developed | MESOVELIINA. |
| (1) 4. Coxæ widely separated, scutellum covered. | |
| (6) 5. Head very elongate in front of the eyes, many times longer than wide, and widened towards the apex | HYDROMETRINA. |
| (5) 6. Head short, as wide across the eyes as long. | |
| (8) 7. Posterior femora not reaching to the apex of the abdomen | VELINA. |
| (7) 8. Posterior femora very long and thin, reaching far beyond the apex of the abdomen | GERRIDINA. |

AËOPHILINA.

AËOPHILUS, *Sign.*

Short, suboval, finely pubescent. Head convex, eyes touching the pronotum, ocelli wanting, antenniferous tubercles on the underside of the cheeks; antennæ long and thick, four-jointed, the joints, except the basal one, which is slightly thickened, of about equal width; rostrum four-jointed, extending to about the intermediate coxæ, its apex very finely pointed; pronotum transverse, its sides and anterior margin straight, base slightly sinuate; scutellum short and wide; elytra undeveloped, very short at the suture, their lateral margin rounded, about twice as long as the sutural, apical margin sinuate, apical lateral angle acute. Dr. Puton remarks that the ♂ has the genital segment exposed above, the ♀ beneath. The specimens I have before me appear to be males; legs pubescent, tarsi three-jointed, claws at the apex of the tarsi, very strong and curved.

A. Bonnairei, *Sign.*—Ferruginous, finely pubescent, with a few longer fine hairs, elytra and abdomen darker. Head rather shining; eyes round, red, not projecting beyond the pronotal angles; antennæ with the basal joint slightly produced beyond the apex of the head, second thinner than the first, and about twice its length, third and fourth subequal in length, slightly shorter than the second; pronotum transverse, front margin and sides straight and parallel, base slightly sinuate, lateral margins narrowly reflexed; scutellum very wide and short; elytra short, shaped as described under the head of the genus; abdomen with all the segments exposed, its sides rounded, and the connexivum much reflexed. Two genital segments at least appear to me to be visible, but they are very curious in form, and I cannot satisfy myself as to their exact relations to each other; legs rather thick.

L. 3-3½ mm.

Under stones, etc., below high-water mark; Polperro, Cornwall, *F. Smith*; Mousehold, near Penzance, under stones and under a star-fish, *Marquand*; Lyme Regis, *W. R. Kilbourne*; Plymouth, *J. H. Keys*. Mr. Keys made some interesting observations on a specimen which he had in confinement for some days; he found that it would not live under water, and when placed on the surface attempted no movement of its own; he gave it a piece of a submarine worm, and says he "had the satisfaction of observing the bug in close proximity, rubbing or cleansing its proboscis with great gusto, suggesting the idea that it had just enjoyed its morning meal."

MESOVELIINA.

MESOVELIA, *Muls. & Rey.*

Dimorphous, elongate. Head with the eyes large, almost touching the pronotum; ocelli on the vertex; face elongate; antenniferous tubercles largely developed, situated rather on the underside of the head; antennæ slender, first joint long and slightly curved, about equal to the third in length, second slightly shorter, fourth about equal to the third; rostrum reaching to the intermediate coxæ; pronotum subtrapezoidal, the posterior angles bluntly produced, the base sinuate; scutellum large, produced and somewhat square at the apex; elytra with the corium coriaceous and strongly nerved; clavus submembranous; membrane wanting in the brachypterous form; abdomen with two long genital segments in the ♂, visible above, one short one in the ♀; legs long and slender; coxæ contiguous, or nearly so; tarsi three-jointed; claws apical.

There is only one known European species of the genus.

M. furcata, *Muls. & Rey.*—Elongate. Head testaceous, with the central lobe of the face, a line on the forehead, and two round spots on each side black; pronotum tes-

taceous in front, black behind; sides slightly sinuate; posterior angles rounded and produced; base slightly sinuate; disc with two small foveæ anteriorly; scutellum black, more or less pale in the centre; elytra with the nerves of the corium very strong, pale between them; clavus membranous, white; membrane, when present, white, and without nerves; legs testaceous; abdomen pale, beneath clothed with dense white pubescence.

L. $3\frac{1}{2}$ mm.

Burton-on-Trent, Woking Canal; rare.

HYDROMETRINA.

HYDROMETRA, *Latr.*

This genus is so peculiar in form that it cannot be confounded with any other; its habit also of walking slowly along the surface of the water is, I believe, peculiar to itself. There is only, so far as I know, one Palearctic species.

Very elongate linear. Head very long, longer than the entire thorax, widest in front, at the antenniferous tubercles; eyes far remote from the pronotum; ocelli absent; face horizontal; antennæ slender, inserted near the apex of the head, first joint reaching slightly beyond the apex of the head; rostrum three-jointed, scarcely as long as the head; pronotum nearly parallel-sided, more than twice as long as wide; scutellum hidden; elytra in developed specimens in one piece, nearly as long as the abdomen, in undeveloped specimens short and subtruncate; abdomen nearly parallel-sided; genital segments long in the ♂, two visible above, the first produced above over the second in a point, beneath with two small tubercles; apical abdominal segment also with two raised ridge-like tubercles; ♀ with the genital segments shorter, but with the projecting point of the first segment longer, reaching beyond the apex of the second;

legs long and slender; coxæ very remote, inserted at the sides of the sternum; claws apical.

H. stagnorum, *Linn.*.—Linear, black; pronotum and base of the head, and of the first and second antennal joints more or less rufescent; legs testaceous, apices of the femora and tibiæ and the tarsi darker; surface dull; antenniferous tubercles shining, second joint of the antennæ thinner than the first, about twice its length, third about three and a half times as long as the second, fourth longer than the second. Head between the antennæ wider than across the eyes; pronotum slightly strangulated in the middle, its sides sinuate posteriorly when viewed laterally; disc with a central impressed line; elytra, when developed, with two small discal tubercles, and pale between the nerves; beneath clothed with fine silvery pubescence.

L. 11–12 mm.

Generally distributed, on stagnant water.

VELIINA.

Elongate, 6–7 mm. in length, first joint of antennæ long, curved	VELIA.
Short and broad, $1\frac{1}{4}$ – $1\frac{1}{2}$ mm. in length, first joint of antennæ short	MICROVELIA.

VELIA, *Latr.*

A genus of only two or three species as far as Europe is concerned, which live on the surface of running water, although they have been found occasionally on stagnant. The Rev. W. F. Johnson reports the capture of our British species, *V. currens*, on stagnant water in Ireland, at a great distance from any stream; the species are dimorphous, the winged form of *currens* being much rarer than the apterous. Head short; eyes large, not quite touching the pronotum; ocelli wanting; face short, nearly perpendicular; antenniferous tubercles rounded; antennæ with the first

joint the longest, and curved, the other three about of equal length; rostrum reaching to about the middle of the mesosternum; pronotum five-sided in the developed form, much widened behind; base largely produced over the base of the elytra, subtrapezoidal in the undeveloped; elytra in the developed form without divisions, entirely membranous, in the undeveloped entirely absent; connexivum reflexed, the sixth segment produced into a sharp point; in the ♂ two genital segments are visible above, in the ♀ only one; on the first abdominal segment in the developed form are two sharp longitudinal ridges, springing from a semi-circular basal elevation, which looks like a scutellum, but is really abdominal; legs inserted at the sides of the sterna, so that the coxæ are very remote; intermediate femora very long, narrow; posterior femora incrassated, bearing two spines and a row of denticulations in the ♂; tarsi three-jointed; claws subapical; metasternum with a curved carina, terminating in a transverse impression above the posterior coxæ, and from its posterior side project several curved bristly hairs; this resembles the orifice of the odoriferous sac in the land bugs.

V. currens, *Fab.*—Blackish brown. Head with a smooth vertical line; pronotum largely and shallowly punctured, front margin and dorsal line more or less testaceous, near each anterior angle is a round silvery pubescent spot; sides slightly sinuate; base subtruncate in the undeveloped form, produced into a long angular process in the developed, its apex widely rounded; elytra, when present, black, with two basal spots, an oval spot on the middle of the disc, and a small round apical spot white; abdomen testaceous, with the angles of the segments of the connexivum, and a spot on each side of the segments beneath, black; in the undeveloped form there is a broad black band on each side of the abdomen; genital segments black; legs black, femora slightly paler towards the base, posterior pair incrassated, especially in the male, in which

sex they bear two spines on their underside, and a row of denticulations.

L. 6-7 mm.

Common in streams, etc.; developed form rare; it appears to be generally distributed, as it is recorded from Armagh, *Johnson*; Connemara and Aran Island, *R. F. Scharff*; Forres, *Norman*; Shetlands, *Reuter*.

MICROVELIA, West.

Very small, short. Head triangular; face slightly declivous; eyes very large, touching the pronotum, and projecting beyond its anterior angles; ocelli absent; antenniferous tubercles on the underside of the head, first joint of the antennæ thick, not projecting more than a quarter of its length beyond the apex of the face, second joint at the apex about as thick 'as the first, third joint thinner, about equalling the second in length, fourth joint long, about equalling the second and third together, and in the centre about as thick as the first; rostrum reaching to the middle of the mesosternum; pronotum with its sides short, base angularly produced over the elytra in the developed form, very slightly and evenly rounded in the undeveloped; elytra in the developed form submembranous throughout, rather longer than the abdomen; nerves thick; abdomen beneath clothed with silvery hairs; connexivum reflexed; legs, coxæ very remote from each other, intermediate femora long and narrow, posterior pair incrassated, tarsi of front legs two-jointed, of the others three; claws inserted above the apex of the terminal joint.

M. pygmæa, Duf.—Black. Head with a silvery line along the inner margin of each eye; first joint of the antennæ pale at the base; pronotum with the posterior angles produced considerably beyond the sides of the elytra; near the anterior margin are two small transverse

pale spots, which, with the margin, are clothed with shining silvery pubescence; disc with an elevated dorsal line; elytra greyish black, with numerous elongate white patches, and a round one behind the centre of the lateral margin; abdomen black, with silvery patches of hair above, and clothed beneath with silvery hairs; legs black, femora pale at the base.

L. $1-1\frac{1}{2}$ mm.

Macropterous form rare; near Chobham; Reigate; Lincolnshire, *J. E. Mason*; Norfolk, "common," *Edwards*; Cardiff and Taff's Well, *Billups*; Pett Level, Sussex, *Butler*; Hayling, Lulworth, Edinburgh, Belfast, *Dale*.

GERRIDINA.

GERRIS, *Fab.*

A genus distinguishable at once by its long thin legs, and its habit of jumping along the surface of the water.

Species often dimorphous, elongate, upper surface dull, more or less black, in some species with the pronotum brownish, beneath densely clothed with brilliant silvery hairs. Head short; face horizontal, parallel-sided in front of the eyes; eyes very large and prominent; ocelli none; antenniferous tubercles small, but slightly prominent; antennæ with the first joint very long; rostrum short; first and second joints short and thick, fourth joint thin; pronotum elongate, constricted anteriorly, its base produced into a somewhat rounded angular process; elytra, when present, hard, coriaceous, strongly ribbed; connexivum sometimes produced at the apex into an acute process, at other times into a rounded angle; three genital segments visible in the ♂, two in the ♀; anterior coxæ very distant from the intermediate pair; intermediate and posterior pairs close together, situated on the sides of the sterna;

intermediate and posterior femora very long, also the tibiæ; these vary much in proportions in the different species; tarsi two-jointed; claws ante-apical.

We have ten species in this country out of twelve recorded as Palæarctic in Puton's Catalogue. They are all very much alike in general shape and colour, but there are good structural characters in the legs, antennæ, etc., by which they may be distinguished apart.

- | | | |
|------|---|-----------------|
| (6) | 1. Sixth segment of the abdomen produced at each side into a more or less elongate spine. | |
| (3) | 2. More or less ferruginous, first joint of the antennæ shorter than the second and third together (Subg. <i>Limnopus</i> , Stål.) | RUFOSCUTELLATA. |
| (2) | 3. Black, first joint of the antennæ longer than the second and third together (Subg. <i>Hygrotrechus</i> , Stål.) | |
| (5) | 4. Points of the sixth abdominal segment projecting as far as or beyond the genital segments, lateral margins of the pronotum narrowly pale | PALUDUM. |
| (4) | 5. Points of the sixth abdominal segment shorter than the genital segments, pronotal margins concolorous | NAJAS. |
| (1) | 6. Sides of the sixth segment of the abdomen not spinose, only angular (Subg. <i>Limnotrechus</i> , Stål.) | |
| (12) | 7. Pronotum more or less yellowish on the disc. | |
| (11) | 8. Abdomen beneath finely carinated, without longitudinal lines in the silvery pubescence. | |
| (10) | 9. Larger and more robust, pale colour more rufescent, very wide across the intermediate coxæ | COSTÆ. |
| (9) | 10. Smaller and less robust, pale colour more flavescent, not very wide across the intermediate coxæ | THORACICA. |
| (8) | 11. Abdomen beneath finely channelled down the centre, and also with longitudinal lines in the silvery pubescence | ASPERA. |
| (7) | 12. Pronotum entirely black on the disc. | |
| (14) | 13. Lateral margin of the pronotum yellow only behind the anterior constriction | GIBBIFERA. |

- (13) 14. Lateral margin of the pronotum yellow also anteriorly.
 (18) 15. Posterior tibiæ and tarsi together almost as long as the femora.
 (17) 16. Male with two teeth on the sixth segment beneath, female with the first genital segment transverse, and transversely impressed ODONTOGASTER.
 (16) 17. Male without teeth on the sixth segment, female with the first genital segment square, and carinated longitudinally LACUSTRIS.
 (15) 18. Posterior tibiæ and tarsi together about two-thirds as long as the femora ARGENTATA.

G. rufoscutellata, *Latr.*—Rufescent or ferruginous; head, a spot on each side of the pronotum in front, the mesopleuræ just under the pronotal plate, the elytral nerves and the abdomen above blackish brown, beneath densely clothed with silvery shining hairs. Antennæ very long, when turned backwards reaching to the posterior coxæ, first joint not quite so long as the second and third together, second and fourth subequal, third rather shorter; pronotum elongate, very slightly widened behind, base produced in a rounded angle over the elytra, disc with a distinct, slightly raised, paler dorsal line, and with a blackish spot on each side of it near the anterior margin, surface clothed with exceedingly short golden hairs, visible only under a strong power; elytra slightly longer than the head and pronotum together, rufescent, nerves thick, darker, and clothed as the pronotum; abdomen black above; connexivum narrowly pale, produced at the apex into a long spine, about equalling the genital segments in length in the ♂, or longer than these in the ♀; legs ferruginous, apical joint of the posterior tarsi not a quarter so long as the basal.

L. 17 mm.

Very rare; Mousehold Heath, Drayton Drewray, Horning, *Edwards*; Guestling, near Hastings, *L. P*

Collett; Pitlochry, *Norman*; Haliday Collection without locality.

G. paludum, *Fab.*—Like the preceding in form, uniformly black, with the exception of the lateral margins of the pronotum, a dorsal line on its anterior lobe, a transverse spot at the base of the head, and the connexivum, which are pale. Antennæ shorter than in the preceding, its first joint very long, nearly as long as the other three together; surface of head and pronotum densely clothed with exceedingly short golden hairs, which impart a brownish tinge to them; elytra entirely black; abdomen black above; connexivum narrowly pale, its posterior spines dark, longer than the genital segments, slightly bent outwards at the apex; legs with the posterior femora distinctly longer than the tibiæ and tarsi together; apical joint of tarsi not half so long as the basal. Almost always macropterous; I have never seen it otherwise.

L. 16 mm.

Chobham; Caterham; Eltham; Battle, *Butler*; Cardiff, Taff's Well, Cowbridge, *Billups*; Aylesford, *Marshall*.

G. najas, *De G.*—Very like *paludum*, but very rarely winged; it differs however from that species in having no pale streak on the pronotal margin, the first joint of the antennæ as long as the remaining three, the posterior femora only just longer than the tibiæ and tarsi together, the first joint of the tarsi not quite twice as long as the second, and the connexival spines not so long as the genital segments, straight, their extreme apices not divergent.

L. 16 mm.

Streams, Reigate, Chobham; Hastings, *Butler*; Devon, *Parfitt*; River Avon, Nunton, *Marshall*; Glanvilles Wootton, New Forest, *Dale*; Yelverton, *Bignell*.

G. Costæ, *H. Schff.*—Shorter and broader than any of the preceding. Head black, antennæ ferruginous, basal joint about equal to the second and third together, second and third subequal, fourth slightly shorter than the first;

pronotum considerably widened posteriorly, its disc widely rufescent on the posterior lobe with a darker dorsal line, anterior lobe dark, with a rufescent dorsal line, sides below the lateral carinæ fulvous; elytra black; abdomen black, connexivum pale, its extreme edge darker, its apex terminating in an acute but not sharply-pointed angle, which reaches to about the apex of the first genital segment; legs ferruginous, anterior femora outwardly black; mesopleuræ very wide, projecting far beyond the sides of the pronotum, especially at the region of the intermediate coxæ, clothed with greyish silvery pubescence next the pronotum, then with a band of golden pubescence below that, the underside of the sterna silvery; abdomen beneath with a fine central carina and a very shallow depression along each side of it, sixth ventral segment in the ♂ deeply and bisinuate emarginate.

L. 13 mm.

A subalpine species; Ox Edge, Buxton, *W. W. Fowler*; Loch Rannoch, *Marshall*; Perthshire, *McLachlan*; North Wales, *H. Francis*; Pitlochry, *Norman*; Orkneys and Aberdeen, *Reuter*; Ben Nevis, Isle of Harris, *Dale*.

G. thoracica, *Schum.*—A much slenderer species than the last, though like it in the distribution of colour; the rufescent colour is, however, paler and of a yellower tinge, and the dark ground colour of the insect is rather paler and more greenish brown; eyes more prominent; pronotum less widened behind, the pale submarginal band not continued on to the anterior lobe; legs with the first joint of the posterior tarsi nearly twice as long as the second; the mesopleuræ are much less produced laterally than in *Costæ*, and the abdomen is not impressed longitudinally at the sides of the central carina; sixth ventral segment in the male deeply and bisinuate emarginate.

L. 11–12 mm.

Common, and generally distributed.

G. aspera, *Fieb.*—Rather shorter than *thoracica*, and

coloured more like *Costa*. Dorsal and submarginal lines of the pronotum pale throughout; elytra, when present, of a rufescent brown; connexivum rather more narrowly pale; femora shorter than in *thoracica*, the basal joint of the posterior tarsi not nearly twice as long as the second; abdomen beneath with a fine central channel, and also with the silvery pubescence on each side arranged somewhat in longitudinal lines; sixth ventral segment in the ♂ simply emarginate.

L. 10–11 mm.

Rare, and apparently a northern species; Loch Galby, Power; Pitlochry, Norman; Forres, Reuter.

G. gibbifera, Schum.—Black, in shape much like *G. Costa*, having the mesopleuræ very wide across the region of the intermediate coxæ; pronotum with a small yellow streak indicating the anterior extremity of the dorsal line, and a submarginal yellow streak on the posterior lobe only; connexivum broadly yellow; legs brownish yellow, paler beneath; anterior femora black above, underside clothed with silvery hairs, a spot on each of the sheaths of the coxæ, and a central line extending from the metasternum to the apex of the body yellow; metasternum with a yellow tubercle in the centre; central line of the abdomen carinated; first joint of the posterior tarsi very long, twice as long as the second.

L. 12 mm.

Common, and generally distributed in the South of England, but not recorded, so far as I know, from Scotland or Ireland.

G. lacustris, Linn.—Black, narrower than the preceding. Pronotum with the submarginal yellow band continued on to the anterior lobe; central carina strong, especially posteriorly; legs pale, the anterior femora with two black lines; connexivum pale; abdomen beneath silvery, its centre more or less widely pale in the ♀; posterior tibiæ and tarsi together almost as long as the femora;

abdomen simple in the ♂, first genital segment in the ♀ square, carinated beneath.

L. 10 mm.

Common, and generally distributed.

G. odontogaster, Zett.—Exceedingly like *lacustris*, but distinguishable by the rather smaller size, the longer intermediate tarsi in proportion to their tibiæ, the black anterior femora, which are only reddish yellow at the base, the wider genital segments in both sexes, the first segment in the ♀ being transverse and impressed at the base beneath; in the ♂ the sixth abdominal segment beneath bears two strong teeth, which incline forwards; posterior tibiæ and tarsi together not much shorter than the femora.

L. 8-9 mm.

Not so common as the preceding, but generally distributed; occurs both in Scotland and Ireland.

G. argentata, Schum.—Smaller than either of the preceding, dorsal keel of the pronotum less raised posteriorly than in *lacustris*, anterior femora dark as in *odontogaster*; pronotum rather more widely rounded posteriorly than in either, with slight silvery pubescence just within the apical margin; posterior tibiæ and tarsi together much shorter than the femora; abdomen beneath simple in the ♂, ♀ with the first genital segment carinated, whole underside very densely clothed with brilliantly silvery hairs.

L. 7 mm.

Not common, Reigate, Chobham; Lincolnshire, *J. E. Mason*; Norfolk, *Edwards*; Battle, *Butler*; Sutton Coldfield, *Blatch*; Parley Heath, Woolmer, New Forest, *Dale*.

REDUVIIDÆ.

This extensive family is only represented in Britain by six genera and sixteen species, of which latter ten belong to the genus *Nabis*. In Puton's Catalogue over 140 species

are recorded as Palaearctic, belonging to twenty-nine genera. The species are carnivorous.

The family may be distinguished by its short, bent rostrum, which does not lie against the under surface of the head when in repose, its filiform antennæ, its prominent eyes, situated as a rule far away from the pronotal margin, and its ocelli (when present) situated behind the eyes; elytra often not fully developed, but when developed, consisting of corium, clavus and membrane; legs with the anterior femora generally incrassated, although scarcely so in *Ploiaria*, in which genus all the legs are exceedingly thin and elongate.

TABLE OF SUBFAMILIES.

(2)	1.	Anterior coxæ very elongate, extending beyond the apex of the head	EMESINA.
(1)	2.	Anterior coxæ not elongate	
(4)	3.	Rostrum three-jointed	REDUVIINA.
(3)	4.	Rostrum four-jointed	NABIDINA.

EMESINA.

PLOIARIA, Scop.

Elongate, with extremely long, fine antennæ and legs. Head rounded posteriorly behind the eyes, eyes prominent, ocelli wanting, vertex with a strong transverse impression; antenniferous tubercles strongly developed; antennæ very long, first and second joints subequal, third and fourth together about half as long as the second; rostrum scarcely longer than the head; pronotum slightly widened behind, its sides nearly straight and carinated; scutellum with two spines, one at the base the other at the apex, below the apical one is another, which appears to me to be on the basal segment of the abdomen, although Dr. Puton considers it "sur le scutum du metathorax;" elytra submembranous, membrane very large, corium produced along each side of it into a long, narrow point; legs very long and thin; coxæ elongate, especially the anterior pair, which are

produced beyond the apex of the head; anterior femora slightly thickened, much shorter than those of the other legs; tarsi short, three-jointed.

We have two species in this country, out of five recorded by Puton in his Catalogue. They occur in such localities as ivy, thatch, etc., and are amongst the most beautiful and delicate of the Hemiptera.

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|-----|---|---------------|
| (2) | 1. Larger, apical joint of the antennæ not a third as long as the third, antennæ and legs pilose, except in rare cases . . . | VAGABUNDA. |
| (1) | 2. Smaller, apical joint of the antennæ nearly half as long as the third, antennæ and legs glabrous, except in rare cases . . . | CULICIFORMIS. |

P. vagabunda, *Linnaeus*.—Pale ochreous, extremely narrow and delicate, antennæ much longer than the body, annulated with black, finely pilose, second joint slightly shorter than the first, third not half the length of the second, fourth about a third as long as the third; pronotum pale ochreous, lateral carinæ and margin white, disc flat, in front with two diagonally placed tubercles, hind angles raised, base straight; scutellum with two spines, one at the base, the other at the apex; elytra mottled with grey, especially on the membrane; base of the abdomen with a spine, like those on the scutellum; legs annulated with black, pilose.

L. 6-7 mm.

In ivy, Chobham, Bideford; Mickleham, Headley Lane, Reigate, *Billups*; Ewhurst, "firs," Muswell Hill, "on palings," Battle, Shalford, "ivy," Barnet, "oak," *Butler*; "fir-trees," Norfolk, *Edwards*; Colwyn Bay, *Beaumont*; Knowle, Boxhill, Bristol, *Blatch*; Bugbrooke, North Hants, Nunton, Wilts, in houses, *Marshall*; Morayshire, *Norman*; Glanvilles Wootton, Freshwater, *Dale*.

P. culiciformis, *De Ge.* (*erratica* *D. & S.*)—Very like the preceding, but smaller, the antennæ shorter, being only about equal to the entire insect in length, their apical joint being about half the length of the third; they are also glabrous, or in rare instances slightly pubescent; the black markings are

more extensive on the elytra, and the legs are glabrous; spine at the base of the scutellum slightly longer.

L. 5 mm.

In my Synopsis, Trans. Ent. Soc. 1876, p. 623, I describe the scutellar spine of this species as "*almost obsolete*;" this statement is utterly at variance with the fact, and I can only suppose I had a specimen before me with the spine broken off.

In thatch, Reigate, Chobham; Lasingham, Yorkshire; Norfolk, *Edwards*; Glanvilles Wootton, *Dale*.

REDUVIINA.

- | | | |
|-----|--|-------------|
| (2) | 1. Head parallel-sided behind the eyes . . . | PYGOLAMPIS. |
| (1) | 2. Head much constricted behind the eyes. | |
| (4) | 3. Head suddenly constricted posteriorly into
a parallel-sided collar | REDUVIUS. |
| (3) | 4. Head gradually constricted in converging
lines from behind the eyes to the margin
of the pronotum | CORANUS. |

PYGOLAMPIS, *Germ.*

Of this curious genus we have only one out of the three Palearctic species recorded by Puton, and its place in our list depends on a solitary record; still, as it is rare all over Europe, we may hope to meet with it again. It is so unlike any other of our genera that it may be distinguished without difficulty. Elongate, head as long as the pronotum, parallel-sided from the base to the insertion of the antennæ, eyes prominent, placed about midway between these points, behind the eyes beneath are two groups of spines; central lobe of the face much produced and pointed, cheeks beneath serrate; basal joint of the antennæ thick, slightly tapering to the apex, nearly as long as the head, the rest thin; rostrum short and very thick; pronotum elongate, widest behind, sides and base straight; scutellum simple; corium and clavus narrow; membrane very large; connexivum wide, reflexed; anterior femora slightly incrassated, pos-

terior pair very long; tarsi three-jointed; pronotum with its inferior margin produced into a curved spine; anterior coxæ contiguous, intermediate pair slightly separated, posterior pair very remote; genital segments in the male triangular. I do not know the female.

P. bidentata, *Fourcr. (bifurcata, D. & S.)*.—Dull brown; second joint of the antennæ about once and a half as long as the first, third about a third as long as the second, fourth about twice as long as the third. Head divided into two portions by a deep transverse channel between the eyes, the posterior portion nearly square, with a central channel; posterior margin with four blunt spines; beneath, the anterior group of spines consists of three, the posterior of four; pronotum trapeziform, flat, with four indistinct carinæ, the two central ones strongest, enclosing a triangular impression at the base; scutellum small, simple; elytra dull brown, nerves shining; connexivum with pale spots at the joints of the segments; legs paler, anterior and intermediate tibiæ banded with black; posterior femora black at the apex.

L. 16 mm.

Under a piece of red sandstone, Quatford, Salop, September, *Thos. Marshall*.

REDUVIUS, *Fab.*

Subelongate. Head small; neck narrow, parallel-sided; ocelli large, prominent, situated just behind the eyes; eyes very large; antenniferous tubercles almost touching the eyes at their base; face, between the antennæ, tricarinate; antennæ very long, setaceous, basal joint thickest; rostrum thick, short, and curved; pronotum much widened behind, anterior margin raised and callose; disc with a transverse impression across the middle, and a deep longitudinal impression widened posteriorly; scutellum large, impressed at the base; elytra longer than the abdomen; corium very

long and narrow; membrane very large, hardly differing from the corium in texture, its nervures enclosing two large cells; anterior femora slightly incrassated, their tibiæ widened at the apex; coxæ not very remote, but the posterior pair more so than the others; male with one genital segment visible, female with three.

R. personatus, *Linn.*.—Pitchey brown, inclining to black, clothed with fine hairs, shining. Antennæ with the second joint about twice the length of the first, second and third subequal, fourth rather shorter; ocelli prominent, yellowish; pronotum with the anterior angles prominent, the anterior margin raised, considerably wider than the base of the head; pronotum raised, rounded and smooth in front, transversely wrinkled behind; transverse impression moderately deep, dorsal one wide posteriorly, and very deep; base rounded; scutellum with a triangular impression at the base; elytra brown; legs with the extreme base of each tibia pale.

L. 16–17 mm.

Generally distributed, but apparently nowhere common. It is a destroyer of other insects, and is said to feed on *Cimex lectularius*, *Diptera*, etc. It is probably chiefly a night feeder, as it often flies to light in windows, etc.

CORANUS, *Curt.*

Head wide across the eyes, which are very prominent, gradually narrowing posteriorly to the pronotum; face long, declivous in front; antenniferous tubercles situated in front of the eyes; antennæ, first joint very short, second subequal to the fifth, third and fourth together about equal to the first, third slightly shorter than the fourth; between the eyes is a deep curved impression, behind which are placed the ocelli; rostrum thick, curved, reaching to about the middle of the prosternum; pronotum widened posteriorly, deeply constricted in the centre, its anterior margin straight; base sinuate; scutellum raised into a

blunt upright spine; elytra rarely developed in this country, reaching only to about the apex of the second abdominal segment, narrow, with a short membranous apex; in developed specimens the corium is long and narrow, the membrane large, its nerves enclosing three cells, of which the apical one is the longest; connexivum much reflexed, its sides rounded; abdomen beneath very convex; all the femora with a slight annular swelling near the apex; tarsi three-jointed; one genital segment visible in the ♂, two in the ♀.

C. sub-apterus, *De G.*—Greyish black, head, pronotum, and legs clothed with long erect hairs. Head with a pale line down the centre behind the eyes, and a pale line along their inner margins; antennæ slightly piceous, second joint with long erect hairs, fifth joint longer in the ♀ than in the ♂; between the second and third, and third and fourth, and fourth and fifth joints are short supplementary ones, so that counting these the antennæ would be eight-jointed; pronotum with the anterior margin straight, its angles right angles, disc raised behind it and rounded, then transversely impressed, and again slightly raised to the base; sides deeply sinuate; posterior angles largely rounded; base sinuate, disc posteriorly with three longitudinal depressions; scutellum with the spine often more or less pale; elytra as described above; connexivum with a pale band on each segment; legs with paler rings.

L. 10–11 mm.

Heathy places, Woking, Deal; Addington Hills, Weybridge, *Douglas and Scott*; Sandwich, Pegwell Bay, Freshwater Bay Pembrokeshire, Milford, *Marshall*; New Forest, *Blatch*; Bournemouth, *Fowler*; Deal, Battle, Camber, Shalford, Ewhurst, *Butler*; Land's End, *Dale*; Norfolk, *Edwards*. Has a distinct scent when alive, which Messrs. Douglas and Scott compare to that of "ripe pears."

NABIDINA.

- (2) 1. Pronotum smooth shining, colour black and red PROSTEMMA.
 (1) 2. Pronotum not shining, colour ochreous or dull brown NABIS.

PROSTEMMA, *Lap.*

This beautiful genus has but slender claims to be admitted into our lists, but the three records of its capture are all well authenticated, so that it can scarcely be omitted. It may be known from all its allies by its scarlet and greenish-black colours, its smooth, highly-polished head and thorax, dull flat scutellum, largely incrassated front femora, denticulated beneath, and the angulately produced apices of the front tibiae; tarsi three-jointed.

P. guttula, *Fab.*—Head, pronotum, scutellum, and abdomen greenish black, legs and elytra scarlet, antennae pitchy brown. Head and thorax highly polished, with long scattered hairs, the latter punctured and impressed near the base, longer than wide, sides slightly rounded, diverging to the posterior angles; scutellum and elytra dull. Only the undeveloped form has been taken in this country, in which the elytra are truncate posteriorly, the membrane very short and transverse, not quite reaching to the apex of the second abdominal segment; abdomen punctured. In the developed form the elytra reach to the apex of the abdomen; the apex of the corium is black, the membrane greyish black, with a white spot on each side below the apex of the corium.

L. 9 mm.

One specimen taken at Charlton, Kent, by Mr. E. W. Janson, which is now in my collection; one recorded by Curtis, from the sandhills near Sandwich, taken by Mr. A. Kennedy, in September, 1837; and one taken in recent years by Mr. Sidebotham.

NABIS, Latr.

A genus of pale ochreous, brown, or in one continental species, green insects, of which we have ten in this country out of the twenty recorded as Palearctic by Puton. All our species occur on or amongst low-growing plants, except *brevipennis*, which is found on nut bushes.

Head with the eyes large, more or less remote from the anterior margin of the pronotum; ocelli situated slightly behind the eyes, one on each side of the central dorsal line; antenniferous tubercles not prominent; antennæ filiform, five-jointed, reckoning the very short joint which follows the first; rostrum slender, reaching to the first or second pair of coxæ; pronotum elongate, constricted into a narrow simple collar in front, considerably widened posteriorly; sides nearly straight; scutellum simple, or depressed at the base; elytra often undeveloped, in some species almost always so, consisting in macropterous specimens of corium, clavus, and membrane, the last having two large cells at the base; in brachypterous individuals these cells are wanting, or the whole membrane may be absent, and the corium much shortened and truncate; abdomen with the connexivum generally more or less dilated; terminal genital segment in the male beneath very large, styles visible from above, and often affording specific characters; in the female two segments are visible above, and the ovipositor can be seen beneath; legs moderately long, anterior femora slightly incrassated, intermediate tibiæ denticulate along their inner margin, tarsi three-jointed.

- (6) 1. Connexivum more or less reflexed, not separated beneath from the central portion of the abdomen (Subg. *Aptus*, Stål.).
- (5) 2. Connexivum dark, with reddish or yellow spots.
- (4) 3. Tibiæ on their external margin with long semi-erect hairs, antennæ longer than the body BREVIPENNIS.

- | | | |
|------|--|------------------|
| (3) | 4. Tibiæ externally with short decumbent hairs, antennæ shorter than the body | LATIVENTRIS |
| (4) | 5. Connexivum pale | MAJOR. |
| (1) | 6. Connexivum beneath separated from the central portion of the abdomen by a distinct channel. | |
| (8) | 7. Eyes very large, almost touching the pronotal margin, connexivum dark (Subg. <i>Stalia</i> , Reut.) | BOOPS. |
| (7) | 8. Eyes moderate, remote from the pronotal margin, connexivum pale (Subg. <i>Nabis</i> , Latr.). | |
| (14) | 9. Abdomen above finely pubescent. | |
| (11) | 10. Abdomen above dark, with pale central lines | FLAVOMARGINATUS. |
| (10) | 11. Abdomen above pale, with darker lines. | |
| (13) | 12. Not very elongate, connexivum wide, foliaceous | LIMBATUS. |
| (12) | 13. Very long and parallel-sided, connexivum narrow, not foliaceous | LINEATUS. |
| (9) | 14. Abdomen above glabrous. | |
| (16) | 15. Pronotum at the base wider than long | FERUS. |
| (15) | 16. Pronotum at the base narrower than long. | |
| (18) | 17. Wider, paler, occurs in grassy places, etc. | RUGOSUS. |
| (17) | 18. Narrower, darker, reddish brown, found on heath | ERICETORUM. |

N. brevipennis, *Hahn*.—Brown, clothed with short, silvery pubescence. Head with two pale spots just in front of the pronotal margin on the shining part of the neck; antennæ longer than the body, with the basal joint as long or longer than the head; pronotum with its sides rounded behind the anterior constriction, and slightly sinuate before the posterior angles, base nearly straight, disc darker across the middle and convex, with a deep transverse depression behind; scutellum black, sometimes with a pale basal spot on each side; elytra pale brown, marbled with darker, almost always shortened to about the apex of the third abdominal segment, membrane dusky; abdomen dark bronzy brown, subparallel-sided in the male, largely dilated

in the female; connexivum reflexed, with reddish spots at the apices of the segments, sixth segment with its angles rounded; legs long, ochreous, mottled with brown, and clothed with long hairs.

L. 8-10 mm.

I have never seen a developed British specimen, but have a ♀ continental one, in which the membrane reaches beyond the apex of the abdomen and is irrorated with small obscure spots.

On *Corylus*, August and September; Wimbledon, Bromley, Kent; Headley Lane and Weybridge, *Billups*; Stevenage, Battle, *Butler*; St. Osyth, *Blatch*; Quatford, Milford, Darenth, *Marshall*; Glanvilles Wootton, *Dale*.

N. lativentris, *Boh.* (*apterus*, *D. & S.*).—Smaller, but similar to the preceding in colour, being brown mottled with darker brown; the antennæ, however, are shorter, not being so long as the entire insect, and the basal joint not so long as the head; the elytra, though generally shortened, reach to the fourth or fifth abdominal segment; the connexivum is more dilated in the ♂ and less dilated in the ♀ than in *brevipennis*, the connexival spots are paler, and the sixth segment has distinct lateral angles; the femora are shorter, and the tibiæ want the exserted long hairs of that species.

L. $6\frac{1}{2}$ -7 mm.

Developed form very rare. I have a ♀ taken at Bournemouth.

Generally distributed, and common by sweeping.

N. major, *Cost.* (*pilosulus*, *Fieb*; *flavomarginatus*, *D. & S.*).—Ochreous brown, clothed with fine black hairs. Head elongate, with a dark central stripe, face nearly horizontal; antennæ ochreous, first joint black at the base; pronotum at the base about as wide as long, anterior margin not half the width of the base, sides rounded in the

middle, base slightly sinuate, dorsal line and a line close to each side black; scutellum with its centre impressed and black; elytra always developed, nerves pale, the interstices darker brown, membrane pale brown, nervures black; abdomen black, connexivum pale, or with darker spots at the apices of the segments in the ♂; legs pale ochreous, with the femora spotted with brown, anterior pair with a broad black longitudinal stripe, posterior pair black at the apex.

L. 7-9 mm.

Common in many localities in rubbish, by sweeping, etc., and generally distributed.

N. boops, *Schüdde*.—Similar in colour to the preceding, but otherwise quite different, its short, compact form distinguishing it at once. Head short, as wide across the eyes as long, these latter very large, each being as wide as the space between them, and when the head is thrown back almost touching the pronotal margin, face nearly vertical; pronotum with the sides and base nearly straight; elytra reaching to the fourth abdominal segment; external margin of the corium largely rounded, central nerve dark, membrane very narrow, not produced beyond the apex of the corium; abdomen black, shining; connexivum reflexed, with obscure reddish spots, and separated beneath by a distinct furrow from the central portion of the abdomen; legs short, front femora black posteriorly, intermediate pair with a black stripe near the apex, posterior pair with the apex widely black.

L. 7 mm.

Very rare; Mousehold Heath, near Norwich, *Edwards*; Gomshall, Surrey, under heath and at roots of grass, and Sandhills, Lowestoft, *Butler*.

N. flavomarginatus, *Scholtz*.—Ochreous. Head with a broad central black stripe; antennæ with the basal joint shorter than the head, second joint narrowly black at the

apex; pronotum with its sides slightly rounded in the middle, base straight, anterior constriction and base smooth and pale, centre with darker markings and more or less cicatricose, dorsal line throughout, and a wider lateral line in front, black; scutellum black, with a pale spot on each side near the apex; elytra reaching to the third segment, ochreous, nerves slightly paler; developed form rare, but with the membrane reaching to the apex of the abdomen, whitish, its nervures brown; abdomen finely pubescent, black, with two narrow pale lines down its centre; connexivum pale, foliaceous, narrow in the ♂, wide in the ♀, divided from the rest of the abdomen beneath by a distinct furrow; legs pale ochreous spotted with brown.

L. 8-9 mm.

Deal, Herne Bay, Chobham, Woking; Reigate, Cowbridge and Taff's Well, South Wales, *Billups*; Grange, Lancashire, *B. Cooke*; Norfolk, *Edwards*; Loch Rannoch, *Marshall*; Pitlochry, *Norman*; Sandhills, Lincolnshire, *J. E. Mason*; Bath, *Blathwayt*; Armagh, *Johnson*; Guestling, *E. P. Collett*.

N. limbatus, *Dahlb.*—Narrower, paler, and more depressed than the preceding. Head very long and narrow, ochreous, its sides in front of the eyes subparallel, eyes large; first joint of the antennæ longer than the head; pronotum ochreous, narrow, and collar-like in front, sides slightly rounded in the middle, base in undeveloped specimens twice as long as the anterior margin, nearly straight, disc raised across the middle with darker markings and more or less cicatricose, dorsal line grey; scutellum ochreous, with a grey dorsal line and a small basal fovea on each side; elytra in the undeveloped form very short, not longer than wide, ochreous, membrane very small, almost linear; abdomen ochreous, subparallel-sided in the male, dilated in the ♀, with a narrow black central stripe

and a wider greyer one on each side; connexivum slightly reflexed, foliaceous, narrow in the ♂, wide and rounded at the sides in the ♀, and often with a red longitudinal streak down its middle; legs pale ochreous, long and slender, femora spotted with small brown spots.

L. 8-9 mm.

Common and generally distributed, by sweeping amongst grass, etc. Developed form exceedingly rare.

N. lineatus, *Dahlb. (Poweri, Saund. Synopsis)*.—Much longer and narrower than *limbatus*. Head longer and narrower, with the sides behind the eyes more swollen; pronotum longer and more regularly trapezoidal, the sides being practically straight; scutellum larger than in *limbatus*, with a dark dorsal line and a larger fovea at each side of the base; elytra in the undeveloped form (the only one I have seen) short and truncate, reaching to the apex of the first abdominal segment; abdomen very long and narrow, quite parallel-sided in the male, and only very slightly widened in the centre in the female; both sexes have the connexivum quite narrow and costate, not foliaceous; legs very long, pale ochreous, the femora with small brown spots.

L. 11-12 mm.

By sweeping, at the roots of grass, etc., generally in damp situations; Chobham, Southwold, Herne Bay; Horning, Surlingham, Cley, *Edwards*; Trustthorpe Sandhills, Lincolnshire, *J. E. Mason*; Oxshott, *Billups*; Camber Sandhills, *E. P. Collett*; Fritton near Lowestoft, *Butler*.

N. ferus, *Linn.*.—Pale greyish ochreous. Head about twice as long as the width between the eyes, with a dark, wide central line narrowing to the base; antennæ with the basal joint shorter than the head, second joint about as long as the pronotum; pronotum much widened posteriorly, base three times as wide as the anterior margin, sides

slightly sinuate, posterior angles rounded, slightly produced, base nearly straight, disc raised posteriorly, with a dark central line, wide in front, very narrow on the basal elevation, surface dull, clothed with exceedingly fine silvery pubescence; scutellum black, with the sides yellow; elytra developed, pale ochreous, nerves pale, sometimes more or less margined with brown; central nerve of the corium with two small black spots towards the apex; membrane large, pale, with brown nerves, and with a small black spot near the external angle of the corium; abdomen above black or brownish; connexivum pale, beneath pale with a broad stripe down each side and the centre brown; legs ochreous, femora spotted with brown.

L. 8 mm.

Common and generally distributed, by sweeping.

N. rugosus, *Linn.* (*dorsalis*, *D.* & *S.*).—Of a more yellowish-ochreous colour than *ferus*; antennæ longer, the second joint much longer than the pronotum, eyes larger and more prominent; pronotum much longer in proportion to its width, the sides straight or slightly rounded in the middle, the base not more than twice as long as the anterior margin; elytra less parallel-sided, nerves very strong and pale, central nerve of the corium with spots as in *ferus*; membrane rarely fully developed, extending slightly beyond the apex of the corium.

L. 7–8 mm.

Common and generally distributed; by sweeping amongst nettles, grass, etc.

N. ericetorum, *Schltz.*—Differs from the preceding in the slightly shorter antennæ, the narrower form, and the darker and more rufescent colour.

L. 7–8 mm.

Common and generally distributed, but only occurring on heaths; probably a variety of *rugosus*.

SALDIDÆ.

Of this family we have only one British genus, out of the three genera known as European. The Saldidæ are peculiar in their habits, most of them frequenting the sides of streams and marshy places, especially salt marshes, where they live on the mud, under and amongst saline plants, such as *Arenaria*, *Salsola*, etc.; *orthochila*, however, is found on heaths, and does not appear to care for moisture. Mr. J. E. Mason, Ent. Mo. Mag., xxv., p. 236, gives an interesting account of the habits of *Salda lateralis* and *saltatoria*, and remarks that they are able to live for some time under water; in some cases he watched the insects crawling from one plant to another under water. At p. 237 he says:—"I watched one until the receding tide left it, after near an hour's submersion; so long as its body and surroundings were wet, it showed nothing of its usual wariness and activity, and was easily taken up with the fingers." Under ordinary circumstances, as all know who have tried to capture them, they are most agile, and run and jump freely. The family may be briefly characterized thus:—

Species slightly convex, oval, eyes very large and prominent, ocelli placed between the eyes, two in number in the *Saldina*, three in the *Leptopina*, of which we have no British representative; antennæ filiform, slightly thickened towards the apex; rostrum three-jointed, not lying against the prosternum; pronotum variable in form, but with the lateral margins always carinate, the base largely sinuate; scutellum large, depressed at the base; elytra composed of corium, clavus and membrane, exterior margin of the corium rounded and reflexed, membrane often more or less abbreviated, with four long subparallel cells, their apices subparallel to the apical margin of the membrane; abdomen with three genital segments exposed in the ♂, three in the ♀ above, but covered beneath by the extensive sixth segment; legs moderately slender, tarsi three-jointed.

SALDA, Fab.

The characters of this genus are given above in those of the family. All the species have a common facies, although the small group with contiguous ocelli, to which Stål has given the subgeneric name *Chartoscirta*, has the pronotum more constricted in front and its sides sinuate. There are thirty-nine species given in Puton's Catalogue, of which we have seventeen in this country.

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|------|---|---------------|
| (28) | 1. Ocelli not contiguous. | |
| (5) | 2. Lateral margins of pronotum pale. | |
| (4) | 3. Larger, broad-oval, clothed with upright hairs. | PILOSA. |
| (3) | 4. Smaller, narrowed in front, glabrous. | LATERALIS. ✓ |
| (2) | 5. Lateral margins of pronotum black. | |
| (9) | 6. Lateral margins of corium black, with a conspicuous yellow spot near the apex, sides of pronotum straight. | |
| (8) | 7. Pronotum narrow, its base hardly wider than the head across the eyes. | RIPARIA. |
| (7) | 8. Pronotum wide, its base much wider than the head. | ORTHOCHILA. ✓ |
| (6) | 9. Lateral margin of corium black or spotted, but without a conspicuous yellow spot near the apex, sides of pronotum rounded or straight. | |
| (15) | 10. Species large, 5-6 mm. | |
| (12) | 11. Upper surface with long upright hairs. | SCOTICA. |
| (11) | 12. Upper surface glabrous or with fine, short pubescence. | |
| (14) | 13. Glabrous, shining. | MORIO. |
| (13) | 14. Clothed with short golden pubescence, dull. | LITTORALIS. ✓ |
| (10) | 15. Species small, 3-4 mm. | |
| (19) | 16. Pronotal margins straight, elytra without silvery hairs. | |
| (18) | 17. Lateral margins of corium with a reniform yellow spot in the middle. | C. ALBUM. |
| (17) | 18. Lateral margins of corium narrowly pale except at the base. | OPACULA. ✓ |
| (16) | 19. Pronotal margins slightly rounded, or, with the elytra, with silvery pubescence. | |
| (21) | 20. Short, elytra black, with very small patches of silvery pubescence, margins largely pale at the base and apex. | MARGINALIS. |
| (20) | 21. Oval, elytra without silvery hairs. | |
| (23) | 22. Coal black, a conspicuous white spot near the centre of the lateral margin of the corium | ARENICOLA. ✓ |

- (22) 23. Of a less deep black, without the conspicuous marginal spot on the corium, corium sometimes entirely pale.
- (27) 24. Upper surface not clothed with semi-erect hairs.
- 26) 25. Spots more distinct, less confluent, front tibiæ dark at the base, centre, and apex SALTATORIA. ^l
- (25) 26. Spots less distinct, more confluent, elytra sometimes almost entirely pale, front tibiæ with a continuous dark line from the base to beyond the middle FALLIPES.
- (24) 27. Upper surface clothed with semi-erect hairs PILOSELLA.
- (1) 28. Ocelli contiguous, pronotum with two transverse rows of punctures, one just behind the front margin and the other in the transverse impression.
- (32) 29. Surface clothed with black bristly hairs.
- (31) 30. Third and fourth joints of the antennæ black and much thickened COCKSH.
- (30) 31. Third and fourth joints of the antennæ not thickened FLORI.
- (29) 32. Surface without black bristly hairs CINCTA.

S. pilosa, Fall.—Broad-oval, black, with pale markings, clothed with fine golden pubescence, and with long, erect, black hairs. Head black, with a line along the inner margin of each eye, and the face in front ochreous; antennæ ochreous, clothed with long hairs, third and fourth joints infusate; pronotum black, very transverse; anterior margin shortly constricted; sides dilated and reflexed, ochreous, nearly straight; posterior angles rounded; base very deeply sinuate; disc punctured, slightly raised in front with a shallow central impression in the raised portion; scutellum black; elytra black, punctured, with ochreous spots, which tend to be more or less confluent, sometimes almost entirely pale; sides of the corium rounded; membrane with the nervures dark or pale, sometimes with dark spots between them; abdomen black or brown; connexivum pale; legs ochreous, clothed with bristly hairs, and with a black line under each of the femora.

L. 5-6 mm.

Local; Pegwell Bay, Southwold; Ravenglass, Dale; Margate, Billups; Wells and Hunstanton, Edwards; Haliday Collection; New Passage, Bristol, Reed; Broughton,

Lancashire; Burnham Norfolk, and Sandwich Kent, *Curtis*; Sheppey, Walton-on-Naze, *Champion*.

> **S. lateralis**, *Fall.* (var. *pulchella*, *Curt.*, *D. & S.*).—Shining, punctured, black and ochreous, glabrous, sides of pronotum pale. Head black; face in front ochreous; antennæ ochreous, darker on the third and fourth joints, basal joint with a black spot beneath; pronotum black, with the lateral margins narrowly pale throughout, or with the pale colour much widened at the base; sides nearly straight, reflexed; posterior angles acute; base deeply sinuate; disc with a deep transverse punctured impression, raised in front of it, the elevation with three foveæ; scutellum black, sometimes pale at the apex; elytra somewhat parallel-sided in the ♂, much dilated posteriorly in the ♀, rarely fully developed, varying in colour from black, with the margins only pale, through more or less spotted varieties to entirely pale; as a rule the dark specimens are males; in the developed form the membrane is longer than the abdomen, pale, with brown nerves; abdomen black, or pale at the sides; apical segment pale; legs pale; femora with black stripes.

L. 4–5 mm.


Worthing, Deal; Sheppey, Whitstable, *Champion*; salt marshes, Hunstanton, *Edwards*; Mumby Chapel, Lincolnshire, *J. E. Mason*; Hayling, Margate, *Billups*; Lymington, Weymouth, *Blatch*; Topsham, Devon, *Parfitt*; Rye, *Collett*; Haliday Collection; Portland, *Dale*; St. Ives, Cornwall, *Mason*; Forres, *Norman*.

> **S. riparia**, *Fall.* (*conspicua*, *D. & S.*).—Velvety black, with a grey sheeny pile, and with rather deep yellow markings. Head black, lobes of the face, and a spot along the side of each eye yellow; antennæ long and stout, first joint yellow beneath; pronotum with the anterior margin narrowly constricted, the constriction longer than in most of the species; sides suddenly widened behind the constriction, straight, slightly reflexed; posterior angles acute, base deeply sinuate, about as wide as the head across the

eyes; disc much raised in front, with a central fovea in the elevation; elytra dull, spotted with yellow, with the sides rounded, and with a conspicuous large yellow spot just above the apex of the corium; membrane yellowish, its nerves black, with a black spot in each cell, inmost cell much shorter than the second; abdomen black; legs dusky ochreous, femora rather darker.

L. 5 mm.

Easily recognized by its narrow, straight-sided pronotum; Rannoch, Perthshire, *Marshall and Rye*; Aviemore, *Snowdon, Champion*.

 **S. orthochila**, *Fieb.*—Black, with yellow spots. Head black, a spot near each eye, and the face at its apex pale; antennæ slender, with the basal joint pale, with a black stripe at the side; pronotum widely transverse, anterior constriction very short, sides straight, posterior angles obtuse, base much wider than the head across the eyes, deeply sinuate, raised portion of the disc in front with a small deep fovea; elytra clothed with fine greyish pubescence, and spotted with small oval yellow spots, generally with a larger spot on the lateral margin, just above the apex of the corium; membrane yellowish grey, black at the base; nervures black, and with a black spot below the apex of the corium, the interval between them yellow; abdomen black; legs yellow, tibiæ at the base and apex narrowly black, front femora with a black spot, apical joint of the tarsi black.

L. 4–5 mm.

In sandpits and on sandy commons, etc., often away from water; Woking, Charmouth, Ilfracombe, Penzance; Shirley, Dulwich, *Billups*; "abundant under *Erica*," Mousehold Heath, Norwich, *Edwards*; Corton, Lowestoft, *Butler*; Dartmoor, Cannock Chase, Barmouth, Isle of Man, *Blatch*; Spridlington Lincolnshire, *J. E. Mason*; Exmouth Warren, *Parfitt*; Armagh, *Johnson*; Forres, *Norman*; Shetlands, *Reuter*; Wembury, Haldon, Dawlish, *Bignell*.

➤ **S. scotica**, *Curt.* (*riparia*, *D. & S.*).—Elongate oval, black, clothed with erect black hairs, elytra with small oval ochreous spots. Antennæ with the second joint subequal to the third and fourth together; pronotum with the sides straight, narrowly reflexed, fringed with long hairs, posterior angles obtuse, base widely and deeply sinuate across the scutellum, disc with a strong transverse impression and a tubercular elevation subdivided in the middle in front of it; scutellum convex, with a strong central impression; elytra with the sides slightly rounded, the pale spots placed one near the apex of the clavus, two between the central nerves of the corium, and four along the apical margin of the corium; all these vary in size, and are liable to be absent; membrane fully developed, smoky, black at the base, nervures black; legs, with the apices and sides of the femora, the apices of the tibiæ and the bases of the anterior pair, and the second joint of all the tarsi, pale.

L. 6 mm.

Lustleigh Cleave, Dartmoor, Lastingham, Rannoch, *Marshall*; Church Stretton, Brecon, *Blutch*; Strathglass, *F. B. White*; Morayshire, Forres, *Norman*; Perth, *Reuter*; Llantrissant, *Billups*; Ullswater, Belfast, *Dale*; Bettws-y-Coed, Wales, *Wollaston*; Isle of Bute and Cartland Craigs, *Curtis*; Willaston, Cheshire, *J. W. Ellis*; Newcastle (Ireland), *Champion*.

➤ **S. littoralis**, *Linn.*.—Short oval, dull, black, without erect hairs, but clothed with very fine adpressed golden pubescence; elytra with very small inconspicuous pale spots, or entirely black. Antennæ with the first and second joints piceous, second distinctly shorter than the third and fourth together; pronotum with the sides behind the anterior constriction slightly rounded, widely reflexed; posterior angles acute, blunt at the apex; disc with a deep transverse impression, raised and rounded in front of it, with a small round fovea in the front of the elevation; scutellum with a deep central impression, transversely wrinkled posteriorly;

elytra with the spots, when present, placed, one on the clavus, and three or four along the inner nerve of the corium; membrane very short, smoky, nervures thick, black; legs brownish ochreous, a line under each femur, and a few spots, blackish; apex of the tarsi black.

L. 6-7 mm.

Common and generally distributed, in salt marshes.

✓ **S. morio**, *Zett.*—Black, shining, glabrous, legs piceous or testaceous, darker in the ♀. Eyes very large; antennæ finely pilose, third and fourth joints together distinctly longer than the second, second and the first in the ♂ above more or less piceous; pronotum with the sides behind the anterior constriction straight, or in the ♀ very slightly curved, widely reflexed; posterior angles acute, blunt at the apex; disc narrowly impressed at the base, raised, rounded, and shining in front, with a small rounded central fovea near the anterior margin; scutellum with a central impression, punctured in front, shining and somewhat wrinkled behind; elytra very shining in the ♂, less so in the ♀, their sides rounded; membrane black, very short, sometimes slightly paler between the nervures; legs testaceous or pitchy, with the femora widely black in the ♀; apices of the tibiæ and tarsi black.

L. 6-7 mm.

On the moors, near Buxton; Scarborough, *Lawson*; Whittlesea Mere, *Dale*; shores of Loch Rannoch, *Marshall*; Brumstead Common, Norfolk, *Edwards*; Horning, *Aviemore*, *Champion*.

✓ **S. C. album**, *Fieb. (stellata, Curt.)*.—Short oval, black, clothed with fine golden pubescence; elytra with grey and yellow markings, with a conspicuous reniform yellow spot in the centre of the lateral margin. Head with the mouth parts yellow; antennæ with the first and second joints pale, the second sometimes blackish towards the base; pronotum short, transverse, sides behind the anterior constriction straight, widely impressed and reflexed, base deeply

sinuate across the scutellum; disc with a wide transverse impression and a small round fovea in the raised portion in front of it, bounded posteriorly by two small tubercular elevations; elytra short, sides much rounded, with numerous yellow and greyish-white spots, a conspicuous large reniform yellow spot on the centre of the lateral margin, and a small round white spot near the apex of the corium; membrane yellow, nervures and a spot in each cell black; legs testaceous, femora spotted with black; tibiæ with the base and apex, and in the first and second pairs with a more or less distinct central band, black; tarsi black at the apex.

L. 4 mm.

I cannot bring myself to agree with Professor Reuter in considering *vestita*, D. & S., as the developed form of this species; it wants the grey spots on the elytra, and especially the small round white apical spot, so characteristic of *C. album*; it also has the sides of the pronotum rounded. I therefore still place it as a variety of *saltatoria*.

Axwell Park, Newcastle, Lanercost, Cumberland, *Bold*; Isle of Man, *Rev. H. A. Stowell*; Wareham, Blackgang Chine, *Curtis*; Selbourne, Isle of Wight, *Dale*; Cardiff, Cowbridge, South Wales, *Billups*; Strathglass, *F. B. White*; Morayshire, Forres, *Norman*; Perth, *Reuter*; Birmingham, Bewdley, Worcester, Matlock, Dean Forest, Swansea, *Blatch*; Saltcoats, *Douglas*; Brent and Bickleigh Vale, Devon, *Bignell*; shingle, banks of Dee, Llangollen, *J. W. Ellis*.

S. opacula, *Zett.*—Black, sides of pronotum straight (or scarcely curved in the ♀), lateral margins of corium narrowly pale, its disc more or less spotted. Head with the mouth parts pale; antennæ black, first joint pale beneath; pronotum with its sides straight, impressed, and slightly reflexed, base deeply sinuate, disc with a well-defined transverse impression, rounded and raised in front of it, with a small central fovea in the elevation; elytra with

the clavus clothed with fine golden pubescence, corium with its entire lateral margin, except at the base and extreme apex, narrowly and evenly pale ochreous; disc with a few pale ochreous elongate spots, which tend to spread in longitudinal lines; near the apical angle is an elongate white spot; membrane ochreous, its nervures and a spot in each cell black; legs ochreous, femora more or less spotted, tibiæ with their extreme base and apex black, tarsi black at the apex.

L. $3-3\frac{1}{2}$ mm.

Scotland, Aviemore, *Champion*; Braemar, *Dr. F. B. White*; Forres, *Norman*.

S. marginalis, *Fall.*.—Short oval, dull, black, sides of the corium pale, the colour widening slightly at the base, and largely at the apex. Head with the mouth parts pale or piceous, first and second joints of the antennæ pale, the first dark at the base in the ♀; pronotum with the sides nearly straight, very narrowly reflexed, posterior angles acute, base deeply sinuate, disc with a straight transverse impression, raised in front of it, with a small central fovea; elytra short, with the sides much rounded; lateral margin of the corium ochreous, the colour not quite reaching to the base, wide at its origin, then much narrowed, and dilated again across the apical angle of the corium; disc unspotted, clothed with very minute patches of silvery hairs; membrane dusky, its nervures and cell-spots black, these latter often absent; legs ochreous, femora widely at the base, and tibiæ and tarsi at the extreme apex, black.

L. $2\frac{3}{4}-3$ mm.

This very distinct little species is rare and local; *Mr. Butler* and I have taken it on Chobham Common, and *Mr. Billups* has taken it at Woking; *Mr. Dale* has taken it at Lewell, Dorset.

> **S. saltatoria**, *Linn.* (var. *vestita*, *D. & S.*; *marginella*, *D. & S.*; *fucicola*, *D. & S.*).—Oval, black, clothed with short golden pubescence, elytra with pale spots, sides of pronotum rounded. Head with the mouth parts pale; an-

tennæ with the first and second joints more or less pale; pronotum with the sides slightly rounded, widely depressed, base broadly sinuate across the scutellum; disc with a transverse impression, raised in front of it, with a small fovea in the elevation; scutellum black; elytra black, with numerous small yellow and whitish spots, varying considerably in their size and colour; legs pale, femora with a black line beneath; anterior tibiæ black at the extreme base and apex, with a cloudy or brownish mark in the middle, other tibiæ black at the extreme base and apex; all the tarsi black at the apex.

L. 3-4 mm.

Generally distributed in moist places by the sides of ponds, on heaths, etc.; a more inland species than the following, and in some localities very abundant. In the var. *vestita* the vestiture of golden hairs is much denser than in the typical form. This variety has only been recorded from Scotland and the Tyneside district.

S. pallipes, *Fab.* (var. *palustris*, *Dougl.*).—Differs from the preceding only in the style of the markings; those of the elytra are larger and less numerous, and tend to spread much more than in *saltatoria*; often, or perhaps generally, the whole of the elytra, except the clavus, the base of the corium, and a few lateral spots, is pale. An apparently constant character has been pointed out by Dr. Reuter, viz. the entire black line which runs down the anterior tibiæ from the base to beyond the middle. In *saltatoria* the line is indicated only at the base, in the centre, and at the apex. This seems a poor character, but it certainly appears to be constant, and to separate the two species in accordance with the style of the elytral markings.

L. 3-4 mm.

Very common, and generally distributed in salt marshes, etc.

S. pilosella, *Thoms.*—Very much like the pale form of *pallipes*, but narrower in proportion to its length, which slightly exceeds that of *pallipes*. It may be known from

that species at once by the longer hairs on the first and second joints of the antennæ, and the semi-erect hairs which clothe its upper surface; the eyes also are smaller and rather farther apart, and the pronotum rather more convex and raised posteriorly; the dark lines on the front tibiæ are very strongly marked.

L. 4 mm.

I have considered this in my last Catalogue as a pilose state of *pallipes*; but at Mr. Edwards's suggestion I have re-examined the matter, and I think I was wrong. The character of the smaller eyes seems to me to be an important one, which had escaped my notice till I re-examined them lately; at any rate, it is a form easily distinguished by its hairy upper surface.

Less common than *pallipes*, but often occurring with it.

Deal, Hastings, Worthing, Southwold; Salthouse, Cley, Norfolk, *Edwards*; St. Leonards, Rye, *Butler*; Hunstanton, *Fowler*; Bristol, Lyminster, *Blatch*; Mumby Chapel, Lincolnshire, *J. E. Mason*; Gravesend, Margate, *Billups*.

S. arenicola, *Scholtz*.—Of a deeper black than either of the preceding species, although similar in form, and possibly only a colour variety of *pallipes*. It may be easily known by the pale white markings of the elytra, which, against the deep black ground colour, are peculiarly conspicuous. They consist of a small spot at the apex of the clavus, a broad transverse band across the centre of the corium and several small spots below it; two side by side near the outer apical angle forming another short band. These markings vary to a certain extent, but the central band seems to be very constant; membrane dark smoky, sometimes unspotted, at other times with the cells pale, with a central oval black spot in each; nervures black, a spot near the apex of the corium and the apical margin pale, a black spot on each side between them; legs pale; tibiæ outwardly, except a band just above the apex, black; tarsi with the apices of the joints black.

L. 3-4 mm.

Rare. Bournemouth, Shiere, Capron; Portsmouth, Moncreaff; Isle of Wight.

S. Cocksii, *Curt.* (*elegantula*, D. & S.).—Head black, shining, with scattered long hairs, eyes very large and prominent, ocelli contiguous, antennæ pilose, with the first and second joints pale whitish, black at the base, third and fourth considerably thickened, black; pronotum black, shining, constricted in front into a narrow collar, then produced at each side into a very slight angle, behind which the sides are sinuate and then diverge in nearly straight lines to the base, which is about twice the width of the anterior margin and largely sinuate; disc clothed with long bristly hairs, deeply impressed across the middle and strongly raised in front of the impression, with a small fovea in the elevation; scutellum black, shining, clothed like the pronotum and elytra with long bristly hairs; elytra black, dull, the rounded, reflexed lateral margins and the inner margin of the clavus, shining, disc with a few greyish spots and a conspicuous white round spot near the apical margin of the corium, lateral margins pale yellow, broadly so at the base and apex of the corium, the pale colour almost or quite interrupted behind the middle; membrane usually very short, dark, nervures black; legs yellow, apices of tibiæ and tarsi black.

L. 3-3½ mm.

In *Sphagnum*; Woking, Chobham, not rare; Fens, Norfolk, Edwards; Knowle, Bewdley, Coleshill, Cannock Chase, Church Stretton, New Forest, Blatch; Gunley, Lincolnshire, W. W. Fowler; West Ham Marshes, Carphilly Castle, South Wales, Billups; Battle, Frant, Fritton Suffolk, Butler; Glanvilles Wootton, Dale.

✓ **S. elegantula**, *Fall.* (*Flori*, *Dohrn.*).—Almost identical in shape and colour with the preceding, but differing notably in the antennæ, which have the first joint pale only at the apex, the second entirely black, and the third and fourth black, not wider than the second, the fourth sometimes

with a yellow spot; the yellow of the lateral margins of the corium spreads rather more on to the disc of the elytra, and the membrane has a yellow patch behind the apex of the corium not observable in *Cocksii*.

L. 3-3½ mm.

Hammersmith, *Power*; Wicken Fen, *Blatch*.

S. cincta, *H. Schff.*—Rather longer than either of the preceding, with the membrane more developed, upper surface glabrous or nearly so. Antennæ filiform, entirely black except the apex of the basal joint, second joint much longer than in *Cocksii* or *elegantula*; pronotum shaped much as in those species, but wider behind in proportion to the anterior margin, anterior callosity not so strongly developed; elytra longer and more parallel-sided, disc more spotted, lateral margins black at the base, then narrowly yellow to the apex, where the colour sometimes spreads; it is also sometimes interrupted by a black spot behind the middle; there is a similar conspicuous white spot near the apex of the corium as in the preceding species; membrane yellowish, its base, apex, nervures, and a spot in each cell, dusky; legs brownish ochreous.

L. 3-3½ mm.

Reigate, Chobham; Redhill, *Linnell*; Mumby Chapel, Lincolnshire, *J. E. Mason*; Leicester, *Marshall*; Armagh, *Johnson*; Fens, Norfolk, *Edwards*; Canning and Rainham, *Billups*; Shalford, *Butler*; Knowle, Coleshill, Sutton Coldfield, Bewdley, Cannock Chase, *Blatch*; Repton, *Fowler*; Morayshire, Forres, *Norman*; Haliday Collection; Land's End, *Dale*; Brackish Marsh, Moreton, Cheshire, *J. W. Ellis*.

CIMICIDÆ.

This family is composed chiefly of small species, but includes the most widely-known member of the order, viz. the common bed bug, *Cimex lectularius*, *Lin.* The chief characteristic of the family lies in the narrowly produced face

extending horizontally, far beyond the base of the antennæ, the sides of which tend to be parallel more than in most of the families. Another characteristic of the family is the presence of the embolium, a narrow piece on the outside of the corium separated off from the disc by a distinct suture. The antennæ are four-jointed, and the third and fourth joints are in some genera much narrower than the other two. In the *Ceratocombina* the first and second joints together are not half so long as the third and fourth; in *Triphleps* the antennæ are thicker in the ♂ than in the ♀. The ocelli are present in all the genera except *Cimex*, although not always conspicuous in the brachypterous forms. The rostrum is three or four-jointed and free except in *Cimex*, where it is received into a groove under the head; the pronotum is generally trapeziform in shape, varying considerably in its length and width. In *Cimex* a different form occurs, the sides being reflexed and widest in front; in the brachypterous females of the *Microphysina* also the trapeziform shape is not always maintained. The scutellum is exposed throughout the family; the elytra vary much in form, in *Cimex* they are always rudimentary, in *Ceratocombus* they cover the abdomen, but are very rarely fully developed, i.e. they are destitute of a membrane; in the *Microphysina* the ♂ only has the elytra developed, those of the ♀ being very short and rudimentary; the abdomen has the connexivum hidden by the elytra. Dr. Reuter says of the genital segments of the males in the *Anthocorina* and *Myrophysina*, that the genital aperture is asymmetrical and placed on the left side of the segment; legs simple, anterior femora incrassated in *Piezostethus*; tarsi two or three-jointed. The species of this family exist on animal or vegetable juices.

TABLE OF SUBFAMILIES.

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|-----|----|---|-----------|
| (6) | 1. | Rostrum three-jointed, tarsi three-jointed. | |
| (3) | 2. | Ocelli absent | CIMICINA. |
| (2) | 3. | Ocelli present. | |

- | | | | |
|-----|----|---|----------------|
| (5) | 4. | Antennæ very long and thin, clothed with long hairs, third and fourth joints together twice as long as the first and second. | CERATOCOMBINA. |
| (4) | 5. | Antennæ not very thin, not clothed with long hairs, and third and fourth joints not nearly twice as long as the first and second. | ANTHOCORINA. |
| (1) | 6. | Rostrum four-jointed, tarsi two-jointed | MICROPHYSINA. |

CIMICINA.

CIMEX, *Lin.*

Of this genus we have four British species, which may be known at once from those of any other genus by their flat, broad, oval form; the absence of ocelli; the broad, truncate central lobe of the face, the short, scale-like elytra, and the reflexed margined pronotum, whose greatest width is in front, and whose anterior margin is very deeply sinuate; rostrum short, reaching to about the anterior coxæ, received in repose into a groove on the underside of the head; antennæ with the third and fourth joints much thinner than the first and second and filiform; legs simple, tarsi three-jointed; mesosternum with a trapeziform plate, the wide end of which projects over the metasternum between the posterior coxæ.

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|-----|----|---|--------------|
| (4) | 1. | Clothed with short hairs, sides of pronotum widely dilated and reflexed, especially in front. | |
| (3) | 2. | Larger, fourth joint of antennæ two-thirds as long as third. | LECTULARIUS. |
| (2) | 3. | Smaller, fourth joint of antennæ three-fourths as long as third. | COLUMBARIUS. |
| (1) | 4. | Clothed with long hairs, sides of pronotum narrowly reflexed. | |
| (6) | 5. | Larger, clothed with silky hairs, third joint of antennæ longer than fourth. | PIPISTRELLI. |
| (5) | 6. | Smaller, clothed with somewhat bristly hairs, third and fourth antennal joints subequal. | HIRUNDINIS. |

C. lectularius, *Lin.*.—Entirely of a reddish brown or brownish yellow colour, closely and deeply punctured, sparingly clothed with short, pale hairs. Head with the

eyes prominent, antennæ with the first joint short and thick, the second and third subequal in length, the fourth about two-thirds as long as the third, the third and fourth very thin and clothed with long, fine hairs; pronotum with the anterior margin very deeply sinuate so as to receive the head nearly to the eyes, its sides rounded, dilated and reflexed, especially in front, and fringed with short hairs, base slightly sinuate, disc somewhat shining, very slightly convex longitudinally; scutellum very short and transverse; elytra in one piece, truncate posteriorly, twice as wide as long, about as long as the first abdominal segment, very largely punctured; abdomen short, oval, flat, more finely punctured than the elytra; connexivum narrowly reflexed; legs slightly paler than the rest of the body.

L. 5-6 mm.

Too common in dirty houses, especially in large towns.

C. columbarius, *Jen.*—Very like the preceding, but rather smaller, the third and fourth joints of the antennæ distinctly thicker and their pilosity not so long, the fourth being nearly three-fourths the length of the third; the second joint is also more thickened to the apex; the pronotum is more transverse and wider in proportion to the abdomen, and the sides of the latter diverge more rapidly from the base.

L. $4\frac{1}{2}$ -5 mm.

In pigeon cots. Alford, Lincolnshire, abundant, *J. E. Mason*.

C. hirundinis, *Jen.*—Smaller than either of the preceding, with much longer pubescence and quite different in the shape of the pronotum and head. Pale testaceous or brown, eyes not prominent, central lobe of the face less narrowed posteriorly, antennæ with the third and fourth joints subequal; pronotum with the anterior margin nearly straight in the middle, produced at the angles, which touch or almost touch the eyes, sides narrowly reflexed through-

out, fringed with long pale hairs, base straight; elytra very largely punctured; abdomen much more finely so; legs paler.

L. 3-4 mm.

In martins' nests; rare. I once took a good series in the windows of a house at Chobham over which a martin had a nest. "Swarming in martins' nests in Cambridge-shire," *Jenyns*; Tunbridge Wells, *Curtis*; Stoke Holy Cross, Norfolk, *Edwards*; dead swallow, Armagh, *Johnson*.

C. pipistrelli, Jen.—About the size of *columbarius*, but longer and more attenuated posteriorly, and with very long pubescence; antennæ with the third joint longer than the second, the second longer than the fourth. Head shaped much as in *columbarius*; pronotum with the anterior margin very deeply sinuate, largely produced at the angles, sides rounded, narrowly and evenly reflexed throughout, fringed with long hairs; elytra strongly punctured; abdomen more elongate and pointed behind than in any of the preceding, clothed with rather conspicuous, long, pale hairs.

L. $4\frac{1}{2}$ -5 mm.

Bats. Eversley, *Crotch*; Cambridgeshire, *Jenyns*; Norfolk, *Lord Walsingham*; Dorsetshire, *Pickard Cambridge*.

CERATOCOMBINA.

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|-----|----|----------------------------------|---|---|---------------|
| (2) | 1. | Pronotum convex, subcylindrical | . | . | CERATOCOMBUS. |
| (1) | 2. | Pronotum flat, widely transverse | . | . | CRYPTOSTEMMA. |

CERATOCOMBUS, *Sign.*

There is only one known representative of this little genus, which occurs in moss, dead leaves, etc. It is extremely fragile, and might be passed for a very small fly, as its movements are very active. Head convex, eyes very far apart, the ocelli placed close to their inner margin; antennæ with their first and second joints stout, the third

longer than the first and second together, fourth subequal to the third, third and fourth very thin, clothed with long hairs; pronotum convex, nearly square, sides subparallel, straight; scutellum triangular, its sides and base about equal; elytra very rarely developed; in the undeveloped form each consists of a convex simple sheath covering the abdomen, nerves apparent towards the apex, lateral margins reflexed at the base; in the developed form the elytra are widened behind, the clavus is distinctly marked, and there appears to be a somewhat distinct membrane; my only knowledge of this form is from the figure given by Reuter, Not. Sällsk. Faun. et Flora Fenn. xi., pl. i. fig. 7. Legs with the anterior coxæ very large, tibiæ rather stout, tarsi three-jointed.

C. coleoptratus, Zett. (*muscorum*, D. & S.).—Brown, subelongate, with long, very remote hairs on the head and pronotum, antennæ and legs paler; the former with very long erect hairs; pronotum in front slightly narrower than the head across the eyes, slightly widened posteriorly, sides straight, base widely and shallowly sinuate; scutellum simple; elytra covering the abdomen; legs simple, anterior tibiæ slightly dilated.

L. $1\frac{1}{2}$ mm.

Moss and dead leaves, Chobham; Weybridge, *Power*; Claremont, *Billups*; Norfolk, *Edwards*; Matlock, under bark, *Blatch*; York, *Beaumont*; Hurst Green, *Battle*, Bexhill, "in moss under heath," *Butler*; Forres, *Norman*; Esher, Bexley, *Champion*.

CRYPTOSTEMMA, II. Schf.

(*Dipsocoris*, D. & S.)

Of a very thin and delicate structure, clothed with fine silky hairs. Nearly flat, head transverse; eyes very remote; ocelli very small, placed close to the eyes; antennæ with the first and second joint short and thick, third and fourth

very long and thin, clothed with fine hairs; pronotum very transverse, trapezoidal, its margins nearly straight; scutellum triangular, transverse; elytra long, extending far beyond the apex of the abdomen, largely rounded posteriorly; membrane very large; legs simple, tarsi three-jointed.

There are two European species, of which we have only one in this country.

C. alienum, *H. Sff.*—Dull, pale greyish-brown, third joint of the antennæ about twice as long as the first and second together, fourth about three-quarters as long as the third; pronotum at the base nearly twice as broad as long, and once and a half as broad as the anterior margin, sides and anterior margin nearly straight, base very slightly sinuate; elytra slightly shining, very thin, their lateral margins reflexed at the base; membrane rather thinner, and more transparent than the rest of the elytra, but of much the same colour; tibiæ with a few fine bristly hairs.

L. 2 mm.

On the edges of streams in summer; near Black Lakes, Kerry, Ireland, *Haliday*; Bettws-y-Coed; Ivybridge, South Devon, *Wollaston*; Banks of the Almond, near Edinburgh, *Sharp*; Bewdley, Ludlow, Church Stretton, *Blatch*; Barry Island, South Wales, *Billups*; Forres, Perth, *Reuter*.

ANTHOCORINA.

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|-----|----|--|---------------|
| (4) | 1. | Third and fourth joints of the antennæ very fine and thin, clothed with long erect hairs. | |
| (3) | 2. | Anterior femora hardly thicker than the intermediate pair | LYCTOCORIS. |
| (2) | 3. | Anterior femora incrassated, much thicker than the intermediate pair . . | PIEZOSTETHUS. |
| (1) | 4. | Third and fourth joints of the antennæ scarcely or not thinner than the preceding, hairs not long and erect. | |

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|------|---|----------------|
| (16) | 5. Cell of the wing with a hook-like nerve. | |
| (15) | 6. Pronotum with a distinct apical collar. | |
| (10) | 7. Apex of the metasternum between the coxæ widely truncate. | |
| (9) | 8. Rostrum reaching to the intermediate coxæ | TEMNOSTETHUS. |
| (8) | 9. Rostrum not reaching beyond the centre of the mesothorax | ELATOPHILUS. |
| (7) | 10. Apex of metasternum rounded and narrower. | |
| (14) | 11. Rostrum short, hardly reaching beyond the anterior coxæ. | |
| (13) | 12. Apical collar of pronotum long, sides gradually diverging from it | ANTHOCORIS. |
| (12) | 13. Apical collar short, sides widely rounded behind it | TETRAPHEPS. |
| (11) | 14. Rostrum reaching to the intermediate coxæ | ACOMOCORIS. |
| (6) | 15. Pronotum without a distinct collar | TRIPHLEPS. |
| (5) | 16. Cell of the wing without a hook-like nerve. | |
| (20) | 17. Species robust, pubescent. | |
| (19) | 18. Head short, scarcely longer than its width between the eyes | BRACHYSTELES. |
| (18) | 19. Head much longer than its width between the eyes | CARDIASTETHUS. |
| (17) | 20. Species elongate, glabrous, parallel-sided | XYLOCORIS. |

LYCTOCORIS, *Hahn*.

There is only one species of this genus, which may be known by the following characters. Head across the eyes as wide as long, narrower than the front of the pronotum; ocelli situated near the inner margins of the eyes; antennæ with the first joint short, reaching to about the apex of the face, second thickened towards the apex, third and fourth subequal, very thin and pilose; rostrum long, reaching to the apex of the metasternum; pronotum subtrapeziform, with its anterior margin sinuate, base sinuate; scutellum large, impressed in the centre; elytra broad and flat, nervures of the membrane very feebly indicated; legs simple.

L. campestris, *Fab. (domesticus, D. & S.)*.—Testaceous brown, dull, base of the elytra and a spot near the apex

paler, membrane smoky white. Head punctured across the centre; pronotum with the sides widely rounded, narrowly reflexed, more distinctly so in front, disc with a shallow transverse impression, finely punctured behind it; scutellum shining, finely punctured at the base, transversely wrinkled at the apex; elytra finely and rather closely punctured, pale at the base, brown on the apical half, generally with a small pale spot near the base of the cuneus inwardly; legs pale ochreous.

L. $3\frac{1}{2}$ mm.

Common and generally distributed; often found in houses, haystack rubbish, under bark, etc. It is able to give a distinct and painful bite.

PIEZOSTETHUS, *Fieb.*

Head rather elongate, face truncate in front; ocelli situated between the eyes posteriorly; eyes slightly prominent, rather large; antennæ with the first and second joints thick, third and fourth very thin, and clothed with long erect hairs; pronotum trapezoidal, smooth, shining, convex in front, sides not impressed, and not margined; scutellum smooth, impressed in the middle; elytra somewhat shining, membrane shining, nervures scarcely visible; legs with the front femora incrassated, especially in the ♂.

There are fifteen species given in Dr. Puton's Catalogue, of which we have three in this country. One of these, *formicetorum*, *Boh.*, inhabits ants' nests. Dr. Reuter has pointed out excellent characters in the form, length, etc., of the canal of the odoriferous sac.

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|-----|----|---|---------------|
| (4) | 1. | Larger, 2-2½ mm. | |
| (3) | 2. | Elytra always developed, pale whitish,
canal of the odoriferous sac almost pro-
duced to the mesosternum | GALACTINUS. |
| (2) | 3. | Elytra sometimes abbreviated, testaceous
or brownish, canal of odoriferous sac
terminating at some distance from the
mesosternum | CURSTITANS. |
| (1) | 4. | Smaller, 1½-1¾ mm. | FORMICETORUM. |

P. galactinus, *Fieb.*—Head and pronotum black, very shining, with a few very remote, long, erect, fine hairs; antennae piceous, second joint at the apex, and third and fourth darker, these latter much thinner than the second, each about three-quarters its length; pronotum at the base about once and a half as broad as long, with the sides rounded in front, thence very slightly sinuate to the posterior angles, base shallowly sinuate, disc very shining and polished in front, slightly depressed and punctured behind; scutellum very shining, the apical half depressed, and the extreme apex transversely rugose; elytra yellowish-white, somewhat dull, and very shallowly and finely punctured, and clothed with exceedingly short pale pubescence; membrane milky-white, shining; legs testaceous, the femora darker, tibiae with rather long bristles; canal of the odoriferous sac very long and curved, almost reaching to the apex of the mesosternum.

L. $2\frac{1}{2}$ – $2\frac{3}{4}$ mm.

Often found commonly in hot-beds, etc., Reigate, Woking; Bath, *Blathwayt*; Bishops Teignton, Devon, *Marshall*; Ewhurst, *Butler*; Edgbaston, Knowle, *Blatch*; Canning Town, Dulwich, and Cardiff, *Billups*; Glanvilles Wootton, *Dale*.

P. cursitans, *Fall.*—Rather smaller than *galactinus*, and proportionately wider; pronotum distinctly shorter and wider, more rounded in front behind the anterior collar; the elytra are darker, and more distinctly pubescent, the whole of the embolium and cuneus, and the clavus and apex of the corium more or less pitchy brown, and more strongly punctured; in the undeveloped form the elytra are short and testaceous, not quite twice as long as the scutellum, round at their apices; legs testaceous, the femora pitchy brown, tibiae spinose; canal of the odoriferous sac rather more abruptly angulated than in *galactinus*, and abbreviated, so that it does not extend nearly so far as the margin of the mesosternum.

L. $2-2\frac{1}{2}$ mm.

Under bark, Reigate; Knowle, Bewdley Forest, Needwood Forest, Sherwood Forest, *Blatch*; Milford, *Marshall*; Devon, *Parfitt*; East Grinstead, Loughton, *Champion*; Glanvilles Wootton, *Dale*; Headley Lane, Chobham, Weybridge, *Billups*.

P. formicetorum, *Boh.*—Much smaller than either of the preceding, and one of our smallest *Hemiptera*, shaped something like *cursitans*, but with the head wider and the eyes less prominent; pronotum wider in front, its apical margin about three-fifths the length of the base, sides slightly rounded; elytra dull ochreous, finely pubescent, puncturation very fine and shallow; legs pale ochreous, the femora slightly darker.

L. $1\frac{1}{2}$ mm.

In nests of *Formica rufa*, Braemar, *F. B. White*.

TEMNOSTETHUS, *Fieb.*

Head and pronotum dull, the former not quite twice as long as the forehead between the eyes; ocelli placed just behind the eyes, in a line with their inner margins, eyes situated at some distance from the pronotal margin; head, behind them, slightly narrowed; antennæ with the second joint almost as long as the third and fourth together; rostrum long, reaching to the intermediate coxæ; pronotum with a narrow anterior collar, sides carinated, rounded thence in very divergent lines to the posterior angles, base deeply and widely sinuate; scutellum impressed towards the apex; elytra sometimes developed, sometimes abbreviated; in the developed form with the membrane complete, extending beyond the apex of the abdomen; in the undeveloped the elytra are scarcely more than twice as long as the scutellum; legs simple, tibiæ not spinose; canal of the odoriferous sac straight.

There is only one species in the genus.

T. pusillus, *H. Schff.*—Head and pronotum black, the

latter clothed with short pale semi-adpressed hairs; antennæ with the second joint often pale in the middle, or in the brachypterous form entirely pale, except at the extreme base and apex; pronotum with a well-defined anterior collar, whence the sides are rounded and narrowly reflexed, posteriorly they are simply carinated, base widely and deeply sinuate, disc with a curved transverse central impression, the base behind it transversely rugose; scutellum black, finely punctured, with a few transverse lines near the apex; elytra brownish-black, clavus and corium inwardly paler, sides of the corium reflexed, a triangular spot at the base and a small transverse spot just above the cuneus whitish; in the undeveloped form with only the triangular basal spot; the membrane in the developed form is dusky, with the base and a spot below the apex of the cuneus hyaline; legs, femora black, tibiæ and tarsi testaceous.

L. 3 mm.

Generally distributed and common on oak and other trees.

ELATOPHILUS, *Reut.*

Differs from *Temnostethus* in the longer head, which is more than twice as long as its width between the eyes, longer and more swollen behind the eyes, and more suddenly constricted behind the swelling; rostrum shorter, reaching only to the middle of the mesosternum; pronotum at the sides with scarcely any apical constriction, base very shallowly and widely sinuate; elytra always complete; canal of the odoriferous sac long, bent at nearly right angles, and almost reaching the apex of the mesosternum.

We have only one out of the five Palæarctic species.

E. nigricornis, *Zett.*—Head and pronotum black, shining; face narrowed in front; antennæ entirely black, first joint hardly extending to the apex of the face, second joint as long as the third and fourth together; pronotum

very narrow in front, the apical margin hardly more than one-third as long as the base, sides very narrowly reflexed in front, and diverging in nearly straight lines till just above the level of the transverse callosity, where they are very slightly angulated, and thence diverge less rapidly in rather sinuate lines to the posterior angles, base very shallowly sinuate, disc with a deep transverse impression near the base, and a strongly-raised elevation in front of it; scutellum black, shining at the base, slightly impressed towards the apex, where it is transversely wrinkled, and dull; elytra ochreous-brown, slightly darker at the sides and apex; membrane dusky, pale at the base; legs with the femora black-brown, tibiæ and tarsi testaceous.

L. $3\frac{1}{2}$ mm.

Perth, Hill of Moncrieff, *Reuter*; also taken at Forres by *Mr. G. Norman*.

ANTHOCORIS, Fall.

This genus is composed of numerous very closely allied species; Dr. Puton gives thirteen in his Catalogue, of which six have been recorded from this country. The specific characters lie chiefly in the nature of the surface of the various parts of the elytra, as pointed out by Dr. Reuter; these characters, although "critical," seem to be well maintained in the different species. The following characters will distinguish the genus from its allies. Head with the eyes not touching the pronotum; ocelli placed posteriorly, close to the inner margins of the eyes; antennæ with the second joint not nearly so long as the third and fourth together; rostrum short, reaching to about the anterior coxæ; pronotum with a well-marked apical collar, sides behind it more or less rounded, base largely sinuate; scutellum impressed at the apex; elytra always developed, their sides subparallel or slightly rounded; legs simple, posterior coxæ close together, the metasternum produced

between them in a narrowly rounded lobe. The species often prey on *Aphides*.

- | | | |
|-----|---|----------------|
| (9) | 1. Elytra in part dull. | |
| (3) | 2. Corium entirely shining, except at
the extreme base | SAROTHAMNI. |
| (2) | 3. Corium dull, except towards the
apex | GALLARUM ULMI. |
| (2) | 4. Corium entirely dull. | |
| (6) | 5. Cuneus entirely shining | NEMORALIS. |
| (5) | 6. Inner angle of cuneus dull. | |
| (8) | 7. Larger, head and pronotum black . | CONFUSUS. |
| (7) | 8. Smaller, head and pronotum in
front red | VISCI. |
| (1) | 9. Elytra entirely shining | SYLVESTRIS. |

A. confusus, *Reut.*.—Head and pronotum black, shining; the latter sometimes pitchy at the posterior angles; face truncate in front; antennæ finely pilose, with the basal joint extending to about the apex of the face, second joint pale in the centre, nearly twice as long as the first, fourth rather longer than the third, third and first subequal; pronotum with a well-defined apical constriction, the sides behind it suddenly diverging and rounded, thence nearly straight to the posterior angles, base sinuate; disc with a deep transverse impression behind the middle, in front of which is a rounded transverse elevation, which is smoother than the base and apical constriction, these latter being indefinitely punctured; scutellum black, shining, impressed at the apex, indefinitely punctured; elytra dull brown, finely punctured and pubescent, very slightly paler near the base of the corium and at the inner apical angle of the embolium; embolium and outer two-thirds of the cuneus shining, pitchy-brown, and more strongly punctured; inner third of cuneus within the central nervure dull; membrane dusky, with a pale spot on each side, and the base white, the three spots sometimes united; legs pitchy-brown, tibiae and tarsi rather lighter in colour than the femora.

L. 4 mm.

Norfolk, *Edwards*; Bakewell, Woking, Bromley, Ilfra-

combe; Darenth, Mickleham, Aviemore, *Champion*; Colwyn Bay, *Beaumont*. No doubt common and generally distributed, but mixed in collections with the following.

A. nemoralis, *Fabr.*—Very like *confusus*, but broader, more brightly coloured, and much more variable in colour, the pronotum posteriorly often pale, the clavus partly pale and partly dark, the base of the corium generally widely pale and the apex dark, the pale colour paler than in *confusus*, the dark darker. There is also a fine grey or hoary pubescence on the corium, visible in certain lights, which seems peculiar to this species; the cuneus and embolium are entirely shining, pitchy, and strongly punctured, and Dr. Reuter says that the inner veins of the membrane are more distinct.

L. 4 mm.

Very common and generally distributed on various trees and shrubs.

A. gallarum ulmi, *De Geer*.—A species very closely allied to the two preceding, but easily distinguished when once recognized; as a rule it is larger and broader; the elytra have the clavus and corium almost of one colour, paler and slightly brighter than in *confusus*, becoming darker towards the apex, the entire embolium and cuneus are shining, but less bright and less strongly punctured than in *nemoralis*; the apex of the corium also, instead of being quite dull as in both the preceding, is somewhat shining; the antennæ are sometimes entirely black, but in the typical form have the second joint pale in the centre; legs testaceous.

L. $4\frac{1}{2}$ mm.

I have one specimen from near Gomshall, and another from Chobham, which clearly belong to this species; and I have three others, one from Woking, and two from Bake-well, Derbyshire, which appear to me to be only varieties of it; they are, however, smaller and more brightly coloured; the antennæ in three of these are entirely black,

possibly they may be referable to *Minki*, *Dohrn*, as one has the head red, although quite mature; but I much doubt if *Minki* is more than a small variety of the above. Since writing this I have seen three of the black antenna'd form: two from Mickleham, and one from Caterham, taken by Mr. Champion. This also is doubtless mixed in collections with *memoralis*.

A. visci, *Dougl.*—A very much smaller species than any of the preceding, though structurally allied to *memoralis* and *confusus*. Head and pronotum ferruginous; the latter black, or darker at the base; antennæ ferruginous, the apex of the second joint and the third and fourth dusky, second joint as long as the third and fourth together; scutellum pitchy black; elytra ferruginous, the apex of the clavus and corium dark, a pale spot near the inner apical angle of the embolium; embolium posteriorly and cuneus externally pitchy brown, shining, and strongly punctured; membrane with a spot on each side, and often one at the base, white; legs pale testaceous (posterior tibiæ in one specimen dark towards the base).

L. $2\frac{3}{4}$ mm.

Off mistletoe, Hereford, *Dr. Chapman*.

A. sarothamni, *D. & S.*—Distinguishable from any of the preceding by its dark colour and brighter surface; the antennæ are quite black, and the legs also in mature examples, the corium entirely bright and shining, except at the extreme base; this last is its most important character, by which it may be known at once; the clavus is quite dull as in all the preceding; in size it is rather smaller than *memoralis*.

L. $3-3\frac{1}{2}$ mm.

On common broom, Woking, Chobham; Weybridge, *Douglas and Scott*; Guestling, *Collett*; Shirley, *Lee*, *Billups*; Perth, *Reuter*.

A. sylvestris, *Linn.* (*nemorum*, *Linn. et auct.*).—Quite distinct from any of the preceding, entirely smooth and

shining. Antennæ long and slender, much longer than the head and thorax together, basal joint black, or sometimes pale, second and third pale testaceous, more or less black at the apex, fourth black. Dr. Reuter says that the antennæ are sometimes entirely black, head and pronotum black, the latter sometimes paler posteriorly, shining, its sides finely marginate, slightly rounded behind the apical collar and then subsinuate, base rather deeply sinuate; transverse callosity behind the collar smooth and shining, transverse impression punctured and wrinkled; scutellum black; elytra entirely shining, pale, whitish testaceous, the clavus generally rather darker, puncturation very indefinite and shallow, a cloud at the apex of the clavus, a spot near the apex of the corium, and the cuneus more or less dark, the dark colour sometimes only apical; membrane white, dusky on the disc, and again at the apex; legs pale testaceous, posterior femora sometimes with an apical ring.

L. 4 mm.

Very common and generally distributed on various trees and shrubs.

TETRAPHLEPS, Fieb.

Nearly allied to *Anthocoris*, but easily distinguished by its shorter pronotum, whose much shorter apical constriction gives a greater appearance of width in front; the cuneus also is wider and much longer, and the surface of the elytra is strongly punctured; the canal of the odoriferous sac is much narrower, and less open; rostrum short, only reaching to or just beyond the anterior coxæ. We have only one British species out of the two recorded as Palæarctic.

T. vittata, Fieb.—Flat, dull brown, head, pronotum and scutellum black. Face in front of the eyes very narrow, its sides slightly sinuate; antennæ finely pilose, black, first joint short, not quite reaching the apex of the head, second piceous, third and fourth subequal; pronotum

clothed with short pale hairs, with a very narrow anterior collar, the sides behind it much rounded and sharply reflexed, gradually diverging to the posterior angles, where they are simple, the reflection ceasing just beyond the middle, base largely sinuate, disc with a shallow transverse impression, posteriorly slightly wrinkled and punctured; scutellum punctured; elytra brown, punctured; embolium and cuneus outwardly sometimes darker; cuneus in the ♀ nearly as long as the corium; membrane dusky, with four longitudinal pale streaks; legs testaceous brown, femora darker towards the base.

L. $3\frac{1}{2}$ mm.

Not rare on fir trees, especially larches, Bromley, Woking, Reigate; Darenth Wood, Mickleham, *Billups*; Norfolk, *Edwards*; Lincolnshire, *J. E. Mason*; Stevenage, Wymondley, Ewhurst, *Butler*.

ACOMPOCORIS, *Reut.*

Very closely allied to *Tetraphleps*, but recognizable by its longer rostrum, which reaches to the intermediate coxæ, by the sides of the pronotum anteriorly being scarcely reflexed, and by the rather longer first joint of the antennæ, which just reaches the apex of the cheeks; according to *Reuter*, the canal of the odoriferous sac is curved forwards at the apex instead of backwards. We have both the Palearctic species recorded from this country.

- (2) 1. Paler, apical joint of antennæ distinctly longer
than the third PYGMÆUS.
(1) 2. Darker, third and fourth joints of antennæ
subequal ALPINUS.

A. pygmæus, *Fall.*.—Head, pronotum, and scutellum black; elytra and legs testaceous or ochreous. Head about as long as wide across the eyes, antennæ with the second joint pale except sometimes at the base and apex, third distinctly longer than the fourth, sometimes pale at the base; pronotum with a narrow apical collar, though not so

narrow as in *Tetraphleps*, sides behind it rounded, but only very narrowly reflexed quite near the anterior angles, base sinuate, disc punctured and clothed with fine pale hairs, having a bright smooth elevation in front of the transverse impression; scutellum punctured; elytra punctured, clothed with adpressed pale hairs, membrane pale smoky-yellowish; legs pale testaceous.

L. 3 mm.

Common on fir trees, and generally distributed.

A. alpinus, *Reut.*—Very like a narrow, dark form of the preceding, but the membrane in the ♂ is longer and the whole insect larger, darker, and more elongate. The ♀ is more difficult to separate, but it is darker, and the elytra are less distinctly punctured, although, if anything, more coarsely so. In doubtful cases, however, I believe the antennal characters will always decide the question; in this species the third and fourth joints are subequal, whereas in *pygmaeus* the fourth is distinctly shorter than the third.

L. $3\frac{1}{2}$ –4 mm.

Norwich, *Dosssetor*; Forres, *Norman*; Esher, *Champion*; Hurst Green, Battle, *Butler*.

TRIPHLEPS, *Fieb.*

Of this little genus we have three out of the eleven species recorded by Dr. Puton in his Catalogue. All the species are closely allied, but can be separated satisfactorily after careful examination. The genus is quite distinct from any of its allies by its small size and broad form; in these it approaches nearer to *Brachysteles* and *Cardiastethus*, which, however, want the hook-like nerve in the wing cell, which is present here.

Head short, first joint of the antennæ reaching to about the apex of the head, third and fourth subequal; in one species, *nigra*, *Wolff.*, the antennæ are considerably thickened in the ♂, in the others they are only slightly thicker than

in the ♀ ; rostrum reaching to the anterior coxæ ; pronotum much widened posteriorly, its sides rounded, anterior margin with a scarcely perceptible collar ; elytra punctured, membrane complete in all our species ; legs simple ; canal of the odoriferous sac very long and curved towards the apex. I have largely drawn from Dr. Reuter's works for the characters of the species.

- (2) 1. Hind tibiæ black or piceous NIGER.
- (1) 2. Hind tibiæ pale ochreous.
- (4) 3. Larger, head as long as wide, pronotum in
front not half as wide as at the base . . . MAJUSCULUS.
- (3) 4. Smaller, head transverse, pronotum in front
more than half as wide as at the base . . . MINUTUS.

T. niger, *Wolff*.—Black, shining, elytra more or less pale. Head much wider than long, antennæ pilose, in the ♂ much thickened and somewhat flattened, second joint thicker than the third and fourth, pale, third about as long as the fourth, fourth often pale ; in the ♀ the antennæ are scarcely thickened and are pale except the basal joint ; pronotum black, anterior margin more than half as long as the base, sides nearly straight, narrowly reflexed in the ♂, disc shining, clothed with fine short hairs, with a transverse shining callosity in front, rugosely punctured across the base ; scutellum shining, punctured ; elytra rather strongly punctured, ochreous in the ♂, with the cuneus and sometimes the apex of the corium darker, in the ♀ very variable in colour, sometimes quite black, sometimes as in the ♂ ; legs pitchy, anterior tibiæ and apex of the anterior femora pale.

L. $1\frac{1}{2}$ –2 mm.

Common. I have taken it generally in heathy places ; Chobham, Woking, Tunbridge Wells, Southwold, Herne Bay, Ilfracombe ; Bournemouth, Chesil Beach, *Dale* ; Norfolk, *Edwards* ; Battle, *Butler* ; Oxshott, *Billups*.

T. majusculus, *Reut.*—Much larger than the preceding, with which it cannot well be confounded, the thinner antennæ and pale tibiæ distinguishing it at once.

Head black, shining, as wide as long, antennæ pale, the third and fourth joints dusky, second joint in the male thickened and about as long as the head, third and fourth joints thinner, subequal, second joint in the ♀ not thickened, shorter than in the ♂, about as long as from the apex of the head to the ocelli; pronotum black, shining, strongly punctured posteriorly, anterior margin not half so long as the base, sides nearly straight, margins narrowly reflexed in the ♂ nearly or quite up to the posterior angles, in the ♀ carinated, but hardly reflexed, disc with a wide transverse callosity, behind which a deep impression, posteriorly deeply punctured and transversely rugose; elytra deeply punctured, sometimes entirely pale, but generally with the cuneus and the apex of the corium black or pitchy brown, membrane pale smoky; legs entirely pale, or with the posterior femora darker at the base.

L. 3 mm.

Herne Bay, Chobham, Woking, Southwold; Bugbrooke, Northants, *Marshall*; Devon, *Payfitt*; Corton, Herringfleet, Suffolk, *Butler*; Deal, *Billups*; Knighton Heath, *Dale*.

T. minutus, *Linn.* (*obscurus*, *D. & S.*; *niger*, *Saund. Syn. pars*).—Smaller and wider than the preceding. Head transverse; pronotum distinctly wider in front than in *majusculus*, the sides being more rounded and dilated anteriorly; the anterior transverse callosity is shorter, so that it does not approach so near the sides; in the ♂ the lateral margins are less distinctly reflexed, especially posteriorly; in both sexes the anterior margin is distinctly more than half as long as the base, the basal portion of the pronotum is also less strongly rugose and punctured; elytra entirely pale as a rule, but sometimes with the cuneus darker; legs pale.

L. 2-2½ mm.

Woking, Chobham; Reigate, Headley Lane, Oxshott, *Billups*; Stevenage, *Butler*; Norfolk, *Edwards*; probably common, but overlooked.

BRACHYSTELES, *Muls. & Rey.*

We possess only one out of the two European species of this genus. In my recent Catalogue I gave both, as from the literature that I was able to consult at the time I made out that the species which we have always known as *Cardiastethus testaceus* was the true *testaceus* of Mulsant, which Reuter now puts under *Brachysteles* as a synonym of *rufescens*, *Costa*. Since then, however, I have been able to consult Dr. Reuter's work on the *Anthocoridæ* (Act. Soc. Sc. Fenn. xiv. pp. 555 *et seq.*) and find that our species is the *Cardiastethus fasciventris*, *Garb.* The two species are very closely allied in colour and size, but differ in the shape of the head.

Head short, transverse, about as long as the interval between the eyes, ocelli placed close to the inner margins of the eyes posteriorly, antennæ with the second joint slightly thickened at the apex, third and fourth subequal, clothed with long fine hairs; pronotum transverse, anterior margin two-thirds as long as the base, with scarcely any collar, sides rounded, base deeply sinuate; elytra short, margins rounded, widely reflexed at the base; legs rather short, simple; wing cell without a hook-like nerve.

B. parvicornis, *Costa (pilicornis, D. & S.)*.—Short oval, dark brown, rather thickly clothed with pale hairs. Head and pronotum nearly black, rather shining, antennæ pitchy-brown, clothed with long fine hairs, first and second joints rather thick, third and fourth subequal, thinner than the second; pronotum with the sides produced and much rounded in front, base deeply sinuate, about once and a third as long as the anterior margin, disc punctured, with a deep transverse impression; scutellum black, punctured, with a deep central impression; elytra testaceous brown, clavus, cuneus, and apex of corium darker, membrane pale smoky.

L. $1\frac{1}{2}$ mm.

The short form and pilose surface will distinguish this

little rarity from any of our other species. I took two off an elm hedge near Southwold in 1877, the only locality I know for it. Dr. Power has also captured it.

CARDIASTETHUS, Fieb.

Very like the preceding genus, but distinguished by the longer head, which is much longer than the width of the vertex between the eyes; the pronotum in our British species is also much narrower in front.

C. fascii-ventris, Garb. (*testaceus, Perr., etc., nec Muls.*).—Elongate oval, clear testaceous, clothed with very fine pale hairs, first joint of the antennæ hardly reaching to the apex of the head; pronotum trapeziform, shining, anterior margin about half as long as the base, sides narrowly margined, nearly straight, base sinuate, disc with a shallow transverse impression, posteriorly finely wrinkled; scutellum shining, transversely impressed behind the middle; elytra finely punctured and pubescent, of rather a greyer tint than the head and pronotum, dull, membrane dark smoky; legs clear testaceous.

L. 2 mm.

Rare. Horsell and Chobham, Surrey; Sheppey, *Champion*; Weymouth, *Blatch*.

XYLOCORIS, Dufs.

Flat, glabrous, elongate, parallel-sided. Head about as long as wide across the eyes, eyes large, first joint of the antennæ very short, not reaching to the apex of the head, third and fourth together much longer than the second; pronotum trapeziform, without apical constriction, smooth and shining, with a scarcely perceptible transverse impression, sides slightly rounded, base sinuate; scutellum nearly flat, slightly concave; elytra elongate, parallel-sided, membrane with four distinct nervures; legs short, femora slightly incrassated.

There is only one species in the genus.

X. ater, *Duf.*—Black, shining, glabrous, antennæ with the second joint pale except at the apex; pronotum shaped as above, with a slightly impressed dorsal line; elytra sometimes more or less piceous, membrane white at the base; tibiæ testaceous.

L. 2 mm.

Under bark. Reigate, Chobham, Birmingham, Salford Priors, *Blatch*; Norfolk, *Edwards*; Sittingbourne, Caterham, Richmond, *Champion*.

MICROPHYSINA.

Second joint of antennæ distinctly longer than the fourth, rostrum reaching beyond the anterior coxæ

MICROPHYSA.

Second joint of antennæ not longer than the fourth, rostrum not reaching beyond the anterior coxæ.

MYRMEDOBIA.

MICROPHYSA, *Westw.*

Males and females dissimilar, ♂ with the elytra fully developed and shaped as in the *Anthocorina*, ♀ with the elytra shortened or not fully developed, and the abdomen widely dilated and convex; face much produced in front, first joint of the antennæ not reaching beyond the apex of the head, second joint longer than the fourth; ocelli large and well defined in the ♂, less definite in the ♀; pronotum trapezoidal in the ♂, and in both sexes with a distinct apical ring not hidden at the sides by the anterior expansion of the lateral margin, disc with a deep transverse impression; scutellum in the ♂ impressed posteriorly; elytra in the male fully developed; embolium well defined, in the ♀ abbreviated and in one piece; abdomen in the ♀ very wide and convex, partially or entirely exposed above; legs simple.

There are six Palearctic species of this genus, of which two occur in this country.

- (2) 1. Head and thorax dull, male subelongate,
female with the elytra covering half the
abdomen PSELAPHIFORMIS.
(1) 2. Head and thorax shining, male elongate,
female with the elytra not covering the
abdomen at all ELEGANTULA.

M. pselaphiformis, *Curt.*.—♂ brownish, head, pronotum, and scutellum nearly black, dull; basal joint of the antennæ not quite reaching to the apex of the head, third and fourth joints subequal, each about three-fourths as long as the second; pronotum much narrowed in front, sides nearly straight, not produced nor reflexed in front, so that the apical constriction is visible at the sides; base deeply sinuate, disc with a very deep transverse impression; elytra brown; embolium and cuneus reddish, the base of the latter paler; membrane pale smoky; legs pitchy brown.

♀ brown, finely pubescent, much shorter and wider than the ♂; head generally red at the base; pronotum short, transverse, subtrapezoidal, deeply impressed across the centre, and strongly raised in front; scutellum with an elevated ridge at the apex; elytra brown, much widened posteriorly, and subtruncate, leaving four abdominal segments exposed; abdomen much dilated posteriorly.

L. ♂ 2 mm.; ♀ 1½ mm.

On lichen-covered trees, under bark, etc., Coombe Wood, Woking, Bromley, Reigate, Tunbridge Wells.

M. elegantula, *Baer.*.—Much narrower and more delicate than the preceding. ♂ elongate; head and pronotum shining, piceous, the former more or less reddish; antennæ long, finely pilose; pronotum narrow, the sides sinuate, disc with a transverse impression, and a corresponding callosity in front of it, base widely sinuate; scutellum pitchy; elytra very long and parallel-sided, pale fawn-coloured brown, clavus, the base of the corium and embolium at the apex paler, cuneus red; membrane very large, wider than the elytra, very pale smoky brown; legs testaceous.

♀ head and pronotum clear testaceous red, shining; antennæ dusky, second joint pale, except at the apex; pronotum very narrow, scarcely widened behind, transverse callosity very strongly marked; scutellum short, shining; elytra very narrow and short, testaceous, parallel-sided, truncate posteriorly, leaving the abdomen entirely exposed; this latter is round, very convex, shining and black; legs clear testaceous red.

L. ♂ $2\frac{1}{4}$ mm.; ♀ $1\frac{1}{2}$ mm.

Not rare; on old lichen-covered trees, Reigate, Tunbridge Wells; Woking, Chobham, Ilfracombe.

MYRMEDOBIA, Baer.

(*Pseudophleps*, D. & S.)

Allied to the preceding in the dissimilarity of the sexes, but with the rostrum thicker and shorter, and the apical joint of the antennæ longer in proportion to the second; the head also in all our species, except *inconspicua*, is distinctly shorter and transverse. There are eight species recorded by Dr. Puton as Palæarctic, of which we have four.

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| (4) 1. | Male, pronotum with a distinct apical collar, exposed at the sides; female either with the elytra covering the abdomen, or with the pronotum without transverse impression. | |
| (3) 2. | Larger, head, in the male, from the ocelli to the apex about equal to the interval between the eyes; female, elytra covering the abdomen | COLEOPTRATA. |
| (2) 3. | Smaller, head from the ocelli to the apex much longer than the interval between the eyes; female, elytra abbreviated | INCONSPICUA. |
| (1) 4. | Male, collar of pronotum very narrow, the lateral margins bounding it at the sides, so that it is enclosed by the anterior angles; female, elytra abbreviated, pronotal transverse impression deep. | |
| (6) 5. | Male, anterior angles of pronotum dilated and reflexed; female, lateral margins of pronotum reflexed | TENELLA. |
| (5) 6. | Male, anterior angles of pronotum not dilated; female, lateral margins of pronotum not reflexed | DISTINGUENDA. |

M. coleoptrata, *Fall.*—♂ brownish black, head, pronotum, and scutellum black. Head short, transverse; antennæ with the fourth joint longer than the third, and subequal to the second; pronotum transverse, with the sides nearly straight, not dilated or produced in front, but gradually rounded to the anterior collar, which is complete, but short; surface transversely wrinkled; anterior callosity smooth, behind which is a transverse impression, base sinuate; elytra brownish, dull, clothed with very fine pale hairs; lateral margins rounded, reflexed; cuneus pitchy; membrane pale smoky; legs brown.

very short, oval, and convex, rather densely clothed with pale hairs. Head and pronotum more or less red, the latter short, without transverse impression, sides rounded in front, nearly straight behind; scutellum red; elytra convex, black, punctured, suture straight, like that of a beetle; abdomen entirely hidden by the elytra; legs testaceous.

L. ♂ 2 mm.; ♀ $1\frac{1}{4}$ mm.

Highgate Wood under dead leaves, *Power*; Spridlington, Lincolnshire, *Wollaston*; Barnet, *Butler*.

M. inconspicua, *D. & S.*—Much smaller than the preceding, and easily distinguished in the ♂ sex by its black colour, its proportionately thicker and longer antennæ much longer head, longer more shining pronotum, which is scarcely wrinkled posteriorly, and has a much shallower transverse impression; the base also is less sinuate, so that the scutellum appears smaller; the elytra are glabrous, and not finely pilose as in *coleoptrata*; legs black.

In the ♀ the pronotum has no transverse impression, the head is reddish at the base, and the abdomen is shining and glabrous, the elytra short, dull, only reaching on to the first segment of the abdomen; the entire insect, except the elytra, shining.

L. ♂ $1\frac{1}{2}$ mm.; ♀ scarcely 1 mm.

At the roots of grass on the sandhills, Southwold and Lowestoft; Weymouth, *Blutch*.

M. tenella, Zett.—♂ like *coleoptrata* in general appearance, but at once distinguishable by the shape of the pronotum, which has its sides subparallel compared with those of *coleoptrata*, the lateral margins being dilated in front, and reflexed, the narrow apical collar lying between the produced dilated angles; the pronotum is shorter, and the transverse impression deeper.

♀ head more or less red; antennæ with the first and second joints, except the apex of the latter, red, second joint nearly one-third shorter than the fourth; pronotum transverse, its sides nearly parallel, reflexed; disc with a transverse callosity in front of the middle with a deep channel behind it; elytra very short and rudimentary, only extending on to the first abdominal segment, truncate posteriorly; abdomen round, convex, slightly shining, punctured and clothed with pale hairs; legs testaceous.

L. ♂ 2 mm.; ♀ 1½ mm.

Woking, Southwold; Esher, *Champion*.

M. distinguenda, Reut.—Closely allied to the preceding, but the ♂ differing in having the anterior angles of the pronotum simple, not dilated as in *tenella*, and not constricted into a collar as in *coleoptrata*; the transverse discal impression also is much less marked than in *tenella*, and there is no impression at the base of the pronotum; scutellum and elytra more densely pilose than in *tenella*.

♀ very like *tenella*, but at once known by the longer antennæ, the second and fourth joints of which are subequal, the dull pronotum with simple unreflexed sides, and by the more closely punctured and more pilose abdomen.

L. ♂ 2 mm.; ♀ 1½ mm.

Busbridge, Surrey, on old lichen-covered larches, July, 1890; Esher, *Champion*.

CAPSIDÆ.

Of this very extensive family we have nearly sixty genera, and nearly 170 species. There is probably no

other family in which the generic characters are so indefinite, and this peculiarity makes it a most difficult one to work. Dr. Reuter, in his magnificent "*Hemiptera Gymnocerata Europæ*," has divided the family into sixteen divisions, of which we have representatives in this country of ten. I have not been able to utilize these divisions, as they are not of equal value to those employed to divide the other families, being strictly equivalent to the subdivisions of the subfamilies. I have, however, as much as possible, kept to his arrangement, although the difficulty of making an analytical table has obliged me to depart from that arrangement in the table itself. I do not feel certain that *Pithanus* is naturally placed with the Continental genera *Myrmecoris* and *Camponotidea* and dissociated from *Allodapus*, *Ætorhinus*, etc., nor that *Bryocoris* and *Monalocoris* should be inserted between *Leptopterna* and *Pantilius*, but Dr. Reuter's knowledge of the family is so extensive that I do not feel justified in proposing alterations in the arrangement he has adopted.

The chief characteristics of the family are the following :—Integument generally of a softer nature than in the other families, some of the species being extremely soft and fragile ; shape very variable, but usually of a more or less elongate oval, varying to short oval. There are many species, however, which are elongate and more or less parallel-sided, and many which are narrow in front and considerably dilated posteriorly ; as a rule, the species are more or less convex. The head is generally smooth and declivous, but in some genera nearly horizontal or perpendicular ; the eyes are generally placed near the pronotum, but in a few genera they are remote from it ; the head is sometimes narrowed behind the eyes, and often has a carina dividing it from the neck ; ocelli rarely distinguishable, antenniferous tubercles very slight ; antennæ four-jointed, basal joint generally the thickest and the third and fourth generally the thinnest, although there are

exceptions to the rule; rostrum four-jointed; pronotum variable in form, sometimes constricted in front into a narrow collar, sometimes with the front margin callose, occasionally with the sides costate, base sinuate or rounded; scutellum exposed, sometimes spinose; elytra composed of corium, clavus, cuneus, and membrane, generally fully developed, but shortened and more or less rudimentary in some species, especially in the ♀. In some genera, *Bryocoris*, *Allodapus*, etc., the developed form of either sex is very scarce; the membrane has usually two basal cells, but occasionally only one, and no discal nervures except those enclosing the cells; wing cells with or without a hook-like nerve. The meso- and metasternum are divided by sutures into three parts, the sternum and a pleura on each side of it; the abdomen has two genital segments exposed, the apical one open above and holding the genital armature; in the ♀ three genital segments appear, and a distinct ovipositor lies along the centre of the segments beneath; legs simple, coxæ very largely developed, especially the anterior pair, tibiæ often with a row of fine spines, tarsi three-jointed.

All the species occur in summer and early autumn, and subsist on the juices of leaves, etc.

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| (12) | 1. Head channelled in the centre or transversely impressed on the vertex; anterior margin of pronotum not callosely raised. | |
| (11) | 2. First joint of the posterior tarsi much longer than the second. | |
| (6) | 3. Head channelled down the middle. | |
| (5) | 4. Base of pronotum truncate, covering the base of the punctured scutellum | MIRIS. |
| (4) | 5. Base of pronotum emarginate, not covering the base of the impunctate scutellum. | MEGALOCERÆA. |
| (3) | 6. Head transversely impressed on the vertex. | |
| (8) | 7. Eyes not, or scarcely, projecting beyond the lateral margin of the pronotum | ACETROPIS. |
| (7) | 8. Eyes prominent, projecting considerably beyond the lateral margins of the pronotum. | |

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| (10) | 9. Elongate, depressed, glabrous above, or nearly so | TERATOCORIS. |
| (9) | 10. Elongate, not depressed, clothed with erect hairs | LEPTOPTERNA. |
| (2) | 11. First and second joints of posterior tarsi subequal | PANILIUS. |
| (1) | 12. Head not channelled nor transversely impressed. | |
| (68) | 13. Pronotum with the anterior margin raised and rounded; or constricted into a short collar-like neck; or much constricted in front and widened behind, with the sides sinuate and the posterior margin largely emarginate. | |
| (17) | 14. Pronotum with the lateral margins acute in front, anterior margin not callose. | |
| (16) | 15. Eyes very prominent, species parallel-sided, black and yellow, or red | LOPUS. |
| (15) | 16. Eyes not very prominent, species oblong ovate, ochreous with brown stripes | MIRIDIUS. |
| (14) | 17. Pronotum with the lateral margins not acute in front, or with the anterior margin callose. | |
| (47) | 18. Pronotum gradually raised and rounded from the narrow anterior collar to the base, its sides rounded or straight, rarely sinuate, base not largely emarginate. | |
| (44) | 19. Membrane with two cells. | |
| (31) | 20. Large or medium-sized species; neck more or less swollen, head not divided from it even at the sides by a carina or raised line. | |
| (24) | 21. Rostrum produced beyond the posterior coxæ. | |
| (23) | 22. Membrane marbled | PHYTOCORIS. |
| (22) | 23. Membrane not marbled | ONCOGNATHUS. |
| (21) | 24. Rostrum not produced beyond the posterior coxæ. | |
| (28) | 25. Species not deeply punctured nor rugose. | |
| (27) | 26. Second joint of antennæ not clavate | CAUCORIS. |
| (26) | 27. Second joint of antennæ strongly clavate | RHOPALOTOMUS. |
| (25) | 28. Species deeply punctured or rugose. | |
| (20) | 29. Surface glabrous, both sexes macropterous | CAPSUS. |
| (29) | 30. Surface hairy, female generally brachypterous | BOHYNOTUS. |
| (20) | 31. Medium-sized or small species; vertex | |

- of head completely or only in part
(near each eye) divided from the
neck by a transverse carina or
rounded margin.
- (41) 32. Vertex carinated at least near the
eyes.
- (34) 33. Hemelytra and nervures of membrane
scarlet DICHROSCYTUS.
- (33) 34. Hemelytra not scarlet.
- (34) 35. Pronotum scarcely convex, transversely
rugose, elytra glabrous PLESIOCORIS.
- (35) 36. Pronotum convex, not transversely
rugose, hemelytra more or less
pubescent.
- (40) 37. Species not clothed with scattered, de-
ciduous, golden pubescence.
- (39) 38. Head very wide, rostrum reaching
beyond the posterior coxæ ZYGIMUS.
- (38) 39. Head not very wide, rostrum reaching
to about the posterior coxæ LYGUS.
- (37) 40. Species clothed with deciduous golden
pubescence PÆCILOSCYTUS.
- (32) 41. Vertex not carinated, but with a
rounded margin posteriorly, visible
especially near the eyes, elytra
glabrous.
- (43) 42. Second joint of the antennæ shorter
than the third and fourth together. LIOCORIS.
- (42) 43. Second joint of the antennæ longer
than the third and fourth together. CAMPTOBROCHIS.
- (19) 44. Membrane with only one cell.
- (46) 45. Third and fourth joints of antennæ
subequal BRYOCORIS.
- (45) 46. Third joint distinctly longer than the
fourth MONALOCORIS.
- (18) 47. Pronotum constricted in front, raised
and widened posteriorly, sides gene-
rally sinuate, base largely emargi-
nate.
- (49) 48. Basal joint of posterior tarsi nearly
three times as long as the second PITHANUS.
- (48) 49. Basal joint of posterior tarsi not much
longer than the second.
- (63) 50. Eyes touching, or nearly touching,
the anterior margin of the pro-
notum.
- (56) 51. Third and fourth joints of the antennæ
not, or scarcely, thinner than the
apex of the second.
- (53) 52. Antennæ somewhat robust, head with
a slight vertical impression in the
centre posteriorly ALLODAPUS.
- (52) 53. Antennæ slender, vertex not impressed.

- (55) 51. Head between the eyes flat, lower than the eyes *ÆTORRHINUS.*
- (54) 55. Head between the eyes convex, higher than the eyes *CAMPYLONEURA.*
- (51) 56. Third and fourth joints of the antennæ much thinner than the apex of the second.
- (60) 57. Second joint of the antennæ as long, or nearly as long, as the third and fourth together.
- (59) 58. Callosities of pronotum scarcely prominent, elytra in both sexes fully developed *CYLLOCORIS.*
- (58) 59. Callosities of pronotum very prominent, elytra in female generally not fully developed *GLOBICEPS.*
- (57) 60. Second joint of antennæ much shorter than the third and fourth together.
- (62) 61. Face nearly perpendicular, *i.e.* nearly at right angles to the vertex, wing cells without a hook-like nerve *MECOMMA AND CYRTORRHINUS.*
- (61) 62. Face declivous, not nearly at right angles to the vertex, wing cells with a hook-like nerve *BYRSOPTERA.*
- (50) 63. Eyes not nearly touching the anterior margin of the pronotum.
- (67) 64. Head constricted behind the eyes, eyes large.
- (66) 65. Posterior femora grooved *SYSTELLONOTUS.*
- (65) 66. Posterior femora not grooved *DICYPHUS.*
- (64) 67. Head not constricted behind the eyes, eyes small *MACROLOPHUS.*
- (13) 68. Pronotum with the anterior margin not raised and rounded, nor constricted into a short, collar-like neck, nor much constricted in front and widened behind in the same species where the sides are sinuate and the base widely emarginate.
- (70) 69. Eyes not nearly touching the anterior margin of the pronotum *MALACOCORIS.*
- (69) 70. Eyes quite or nearly touching the pronotum.
- (72) 71. Head posteriorly very thin and flat, covering the apex of the pronotum, posterior tibiæ somewhat flattened and curved *PILOPHORUS.*
- (71) 72. Posterior tibiæ not curved and flattened.
- (88) 73. Wing cell without a hook-like nerve.
- (77) 74. Head posteriorly more or less covering the front of the pronotum.
- (76) 75. Antennæ nearly twice as long as the body *HALTICUS.*

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| (76) 76. Antennæ short, not so long as the body | STRONGYLOCORIS. |
| (74) 77. Head not covering the pronotum in front. | |
| (81) 78. Species black, clothed with scattered golden or silvery deciduous scale-like pubescence. | |
| (89) 79. Tibiæ with spine-like hairs | ORTHOCEPHALUS. |
| (79) 80. Tibiæ without spine-like hairs | HETEROCORDYLUS. |
| (78) 81. Species not clothed with golden or silvery deciduous scale-like pubescence. | |
| (83) 82. Second joint of antennæ much dilated and flattened | HETEROTOMA. |
| (82) 83. Second joint of antennæ not dilated and flattened. | |
| (85) 84. Second joint of antennæ very long, one half longer than the third and fourth together | LOXOPS. |
| (84) 85. Second joint of antennæ not or scarcely longer than the third and fourth together. | |
| (87) 86. Third and fourth joints of the rostrum together longer than the second, not incrassated | ORTHOTYLUS. |
| (86) 87. Third and fourth joints of the rostrum together not longer than the second, each slightly thickened towards their juncture | HYPSTYLUS. |
| (73) 88. Wing cell with a hook-like nerve (wanting in some specimens of <i>Asciodema obsoletum</i>). | |
| (102) 89. Elytra opaque, dull, or at most only very slightly shining, never clothed with pale, deciduous, scale-like pubescence. | |
| (91) 90. Tibiæ spotted with black | ONCOTYLUS. |
| (90) 91. Tibiæ not spotted with black. | |
| (93) 92. Claws exceedingly short, strongly curved, with an acute tooth at the base | MACROTYLUS. |
| (92) 93. Claws not very short, and not strongly curved, without an acute basal tooth. | |
| (95) 94. Arolia longer than the claws | ONYCHUMENUS. |
| (94) 95. Arolia shorter than the claws. | |
| (97) 96. Rostrum very long, extending beyond the posterior coxæ | AMBLYTYLUS. |
| (96) 97. Rostrum not very long, not extending to the posterior coxæ. | |
| (99) 98. Upper surface with fine, pale, regular pubescence, species subelongate | CONOSIETHUS. |
| (98) 99. Upper surface clothed with brown or | |

- black hairs mixed with paler,
species sub-robust.
- (101) 100. Antennæ with the third and fourth
joints very little thinner than the
second HOPLOMACHUS.
- (100) 101. Antennæ with the third and fourth
joints much thinner than the
second MACROCOLEUS.
- (89) 102. Elytrashing, often clothed with pale
deciduous, scale-like pubescence.
- (104) 103. Second joint of the antennæ shorter
than the third HARPOCERA.
- (103) 104. Second joint of the antennæ longer
than the third.
- (108) 105. Tibiæ with pale spines.
- (107) 106. Elongate, depressed, elytra parallel-
sided PHYLUS.
- (106) 107. Not elongate and depressed, elytra
with sides rounded PLESIODEMA.
- (105) 108. Tibiæ with black spines.
- (112) 109. Elytra clothed with short, deciduous,
scale-like pubescence.
- (111) 110. Second joint of the antennæ in both
sexes incrassated ATRACTOTOMUS.
- (110) 111. Second joint of the antennæ not in-
crassated PSALLUS.
- (109) 112. Elytra clothed with fine regular
hairs.
- (114) 113. Femora entirely pale ASCIODEMA.
- (113) 114. Femora more or less dark, or spotted
with black or brown PLAGIOGNATHUS.

PITHANUS, Fieb.

Subelongate, elytra rarely fully developed. Head transverse on the vertex; face nearly perpendicular; eyes large and prominent; antennæ with the basal joint short and stout, the second and following much narrower; pronotum, in the developed form, widest behind, with the sides sinuate, in the undeveloped form, widest in front, in both with a strongly developed lateral tubercle near the front margin, base sinuate; scutellum convex; elytra in the developed form with the cuneus very feebly indicated, as also are the basal cells of the membrane, in the undeveloped form the elytra are only about twice as long as the scutellum; abdomen with the connexivum reflexed; legs rather long.

tibiæ not spined on their outer edge, posterior tarsi with the basal joint longer than the other two together.

There are only two recorded Palearctic species of this genus, of which we have one in this country.

P. Mærkeli, *H. S.*—Black, nearly glabrous, eyes projecting for nearly their entire width beyond the sides of the pronotum, first joint of the antennæ yellow except at the base, second slightly curved, a little longer than the third, fourth about one-third the length of the third, vertex with an obscure pale diagonal line on each side between the eyes; pronotum constricted into a short neck in front, immediately behind which on each side is a strong lateral tubercle; in developed specimens the sides are thence sinuate and diverge posteriorly to the hind angles, in undeveloped specimens they are rounded, and converge to the angles; the base is largely sinuate in the developed form, and nearly truncate in the undeveloped; elytra black or brownish black, its lateral margins pale; membrane dusky; abdomen black; connexivum yellow; legs testaceous, slightly freckled with brown.

L. 4–5 mm.

Common, and generally distributed, but not recorded from Ireland; taken by sweeping; developed form very rare.

ACETROPIS, *Fieb.*

Flat, subelongate in the male, elongate-oval in the ♀. Head nearly horizontal, transversely impressed on the vertex, and also with a slight longitudinal impression; forehead produced over the facial lobes in a sharp point, first joint of the antennæ about as long as the head, a good deal thicker than the following joints; eyes not quite touching the pronotum; pronotum trapezoidal, its sides reflexed and sharp; lateral margins of the elytra reflexed, and sharp; nerves of the corium very distinct and elevated;

legs clothed with very fine short bristly hairs, tarsi with the first and third joints subequal in length.

The species of this genus, of which only one is at present recorded from Britain, closely resemble each other. The two ordinary European species, *carinatus* and *Gimmerthalii*, at first sight look almost identical, but in *carinatus* the pale central line of the pronotum is strongly cariniform, whereas in our species (*Gimmerthalii*) it is quite flat. It is not, I think, improbable that *carinatus* may yet be found with us.

A. Gimmerthalii, *Flor (seticulosa, Fieb., D. & S.)*.—Pale ochreous; head with a central dark stripe, darkest in the ♂; antennæ with the first and second joints clothed with fine bristly hairs, basal joint thicker in the ♀ than in the ♂, second joint very long, third about as long as the first, fourth about two-thirds as long as the third; pronotum transverse, with a wide stripe down each side, and a narrow stripe on each side of the dorsal line, brown, sides widely reflexed, slightly sinuate; base shallowly punctured, nearly straight; scutellum with the basal angles and a line on each side of the centre, brown; elytra shallowly punctured, darker between the discal nerves of the corium, which are very prominent, sides subparallel in the ♂, more or less rounded in the ♀; membrane smoky; legs ochreous, clothed with very short fine bristly hairs on the tibiæ, tarsi black at the apex.

L. 6 mm.

In damp situations by sweeping. Rare; Wimbledon, Southwold, Woking; New Forest, *Marshall*; Birch Wood, *Power*; Fairlight, *Collett*; Deal, Knighton Heath, *Dale*.

MIRIS, *Fab.*

Elongate or subelongate, depressed; eyes touching the pronotum, vertex with a longitudinal impression; antennæ with the first joint robust, more or less hairy, about as long

as or longer than the head; rostrum reaching to about the apex of the mesosternum; pronotum trapeziform, its lateral margins carinated; base nearly straight, covering the base of the scutellum, which is punctured; elytra elongate, except in *holsatus*; legs elongate; posterior femora dentate in *calcaratus*, simple in the other species; tibiæ, especially the posterior pair, bent inwards near the base, except in *holsatus*. There are six species recorded as European by Dr. Puton, of which we have three in this country; *virens*, *Linn.*, I think, is likely to be found with us, but it might easily be mistaken for *lævigatus*. It is, however, a stouter insect; the first joint of the antennæ is shorter, scarcely as long as the head, and the pronotum is wider.

- (4) 1. Hind femora simple.
- (3) 2. Insect elongate ovate, basal joint of antennæ
 clothed with very short hairs *HOLSATUS*.
- (2) 3. Insect elongate, basal joint of antennæ
 densely clothed with long hairs *LÆVIGATUS*.
- (1) 4. Hind femora toothed beneath *CALCARATUS*.

M. *holsatus*, Fab.—Elongate ovate, ochreous or greenish, punctured; eyes rather large and prominent, vertical impression short; forehead margined with dark brown round each eye; basal joint of antennæ thick, rather longer than the head, clothed with short black hairs, second about as long as the third and fourth together; pronotum with all its margins nearly straight, rather wider at the base than long, dorsal line and sides pale, a line on each side within the pale margin darker; scutellum punctured, with a pale central carina, its basal angles black; elytra pale ochreous or greenish, with the clavus and corium inwardly brown; femora spotted with brown, tibiæ straight.

L. 5-6 mm.

Common and generally distributed in summer, taken by sweeping; some specimens hibernate, and occur in moss in winter.

M. *lævigatus*, Linn.—Elongate, punctured, green, or

ochreous, with darker longitudinal lines; antennæ and tarsi in green examples red. Head nearly as long as its width, impressed down the centre, basal joint of the antennæ considerably longer than the head, slightly curved, densely clothed with long hairs; pronotum about as long as its basal width, sides sinuate, with a dark line within the lateral margin, base nearly straight or slightly sinuate, dorsal line pale, raised and smooth; scutellum punctured, with a slightly raised central line; elytra either entirely green, or with the clavus more or less brown; or ochreous, widely blackish grey inwardly; hind tibiæ considerably bent inwardly, the other tibiæ very slightly so.

L. 8 mm.

Very common by sweeping grasses, etc. in summer, and generally distributed.

M. calcaratus, *Fall.*—Very like the preceding but rather wider, similar to it in colour, except that in the ochreous variety the elytra are pale throughout; antennæ rather shorter, the basal joint distinctly so, and the third and fourth together shorter than the second; pronotum shorter, wider in front; posterior femora beneath with a large curved tooth pointing outwards, followed by a shorter and straighter one between it and the apex, tibiæ curved as in *lævigatus*.

L. 7 mm.

Very common by sweeping grasses, etc., and generally distributed.

MEGALOCERÆA, *Fieb.*

A genus closely allied to *Miris*, from which it differs in the emarginate base of the pronotum, which exposes the base of the scutellum, and in the surface of the scutellum itself, which in this genus is smooth and impunctate, whereas in *Miris* it is strongly punctured. We find in Britain three of the four species recorded by Puton.

- (2) 1. Tibiæ densely pilose, but without fine spines. ERRATICA.
 (1) 2. Tibiæ not densely pilose but with very fine short spines.
 (4) 3. Basal joint of the antennæ nearly twice as long as the head. LONGICORNIS.
 (3) 4. Basal joint of the antennæ scarcely longer than the head. RUFICORNIS.

M. erratica, *Linn.*.—Pale green, with three stripes on the head and two or four on the pronotum dark, or black, with the sides of the pronotum and elytra green or yellowish; in the latter variety the dorsal line of the pronotum and scutellum and the vertex of the head are generally pale also. Eyes rather prominent, first joint of the antennæ about two-thirds as long as the head and pronotum, densely pubescent; pronotum indefinitely and feebly punctured, at the base broader than long, sides sinuate, base emarginate, disc with a raised central line; scutellum posteriorly with a raised central line, impunctate; elytra elongate, as long as the abdomen in the ♂, shorter in the ♀; posterior tibiæ slender and curved at the base in the ♂, thick and very slightly curved in the ♀, densely pubescent in both sexes, but especially so in the ♀.

L. 8-9 mm.

Common in grassy places, and generally distributed.

M. longicornis, *Fall.*.—Pale green, pronotum with a brownish stripe on each side. Antennæ very long, basal joint nearly twice as long as the head, with only very short, semi-decumbent hairs, third joint longer than the second; pronotum with the sides slightly sinuate, disc feebly punctured; scutellum impunctate, with a pale raised dorsal line especially towards the apex; elytra as long as the abdomen in the ♂, sometimes shorter in the ♀; posterior tibiæ straight, bearing a few fine, short spine-like hairs.

L. 9-10 mm.

This very distinct species is local, but abundant where it occurs; Fairlight and Hastings; Deal, *Dale*; Taff's Well and Cowbridge, South Wales, *Billups*; Wymondley, *Barnet*, Hurst Green; on *Brachypodium*, Shalford, Boxhill and

Mickleham, *Butler* ; Pitlochry, *Norman* ; Forres and Orkneys, *Reuter* ; Rannoch, *Marshall* ; St. Ives, *J. E. Mason*.

M. ruficornis, *Fall.*.—Dark or pale green, antennæ and tarsi generally more or less red, basal joint of the antennæ about as long as the head, third joint shorter than the second ; pronotum with the sides sinuate, feebly punctured ; scutellum with a slightly raised pale central line ; elytra longer than the abdomen in the ♂, shorter in the ♀ ; legs slender, posterior tibiæ straight, with fine short spine-like hairs.

A form occurs on sandhills near the coast, which is larger and paler, with pale antennæ, but it is not considered by Dr. Reuter as more than a variety of this species ; the third joint of the antennæ is shorter than in the typical form.

L. 6-8 mm.

Common and generally distributed in similar situations to the other species of the genus.

TERATOCORIS, *Fieb.*

Rather similar to the two preceding genera in shape, but at once distinguishable by its transverse head, prominent rounder eyes, projecting considerably beyond the margins of the pronotum, and its transversely impressed vertex, and also by its dimorphic nature, both sexes occurring in the macropterous and brachypterous forms. We have three species in this country of the four recorded from Europe, all of which are more or less rare, and occur in marshy places by sweeping, especially near the sea.

- (2) 1. Basal joint of the antennæ red, smooth and nearly glabrous, its pubescence very fine and scarcely observable **ANTENNATUS.**
- (1) 2. Basal joint of the antennæ not red, with distinct projecting hairs.
- (4) 3. Basal joint of the antennæ in the male shorter than the fourth, pronotum and scutellum in that

- sex black with pale markings; female, basal joint of the antennæ once and a half as long as the head VIRIDIS.
- (3) 4. Basal joint of antennæ, in the male, as long as or longer than the fourth, pronotum and scutellum green with black markings; female, basal joint of the antennæ once and two-thirds as long as the head SAUNDERSI.

T. antennatus, *Boh. (dorsalis, D. & S.)*.—Pale green, glabrous, fading to ochreous after death. Head transverse, deeply impressed on the vertex, black, or only with the centre black, eyes large and prominent, basal joint of the antennæ red, often black at the extreme base, more or less constricted near the apex, pilosity very fine and hardly noticeable, third joint about three-quarters as long as the second, first and fourth joints subequal; pronotum in the ♂ black, with only the margins pale, or pale with black markings, in the ♀ pale with the dorsal line black; in both sexes there is a deep transverse impression parallel to the anterior margin, sides sinuate, base emarginate; scutellum black, varying to pale with a dark central line; elytra, rarely fully developed, varying from green with the suture only slightly fuscous, to brown with the lateral margins, widening at the base and apex, green or pale, membrane dark; legs ochreous, tibiæ and apex of the femora often red.

L. ♂ 4, ♀ 6 mm.

Rare; Reigate; Wicken Fen; Sheppey, *Champion*; Hunstanton, Weybourne and Ranworth, *Edwards*; Lulworth, *Dale*; Camber, *Butler*; by sweeping in damp places, *Reuter* says amongst *Arundo Phragmites*.

T. viridis, *D. & S.*—Pale green, ♂ with the head and pronotum black, the base of the former and the sides, base and two discal spots on the latter pale, scutellum black; in the ♀ only the dorsal line of the head black; antennæ in both sexes green, basal joint distinctly hairy, not so long as in either of the other species, in the ♂ about equal to the fourth in length, in the ♀ about once and a half as long as the head; third joint

about two-thirds as long as the second, fourth about three-quarters as long as the third; pronotum without the deep anterior transverse impression observable in *antennatus*, its sides and base sinuate; scutellum black in the ♂ with the posterior angles pale, green in the ♀; elytra green; legs green.

L. 4-5 mm.

Rare, Raunoch and Skye, *Marshall*; Mumby Chapel, Lincoln, *J. E. Mason*; Forres and Orkneys, *Reuter*; Knock Barril, Perthshire, *Norman*; Braemar to 1700 feet, *F. B. White*; Ireland, *Holiday*.

T. Saundersi, *D. & S.*—Very like the preceding, but entirely green in both sexes, with the exception of a black line which extends from the face to the base of the pronotum in the ♂ and in some specimens to the apex of the scutellum; in the ♀ this line is sometimes indicated, but less strongly than in the ♂; the antennæ are longer than in *viridis*, and the first joint is nearly twice as long as the head in the ♂, one and two-thirds as long in the ♀; pronotum shaped as in *viridis*, but if anything slightly longer; elytra rarely fully developed in the ♀; legs green, hind femora and tarsi often reddish at the apex in the ♂.

L. 5-6 mm.

Deal, by sweeping rushes, etc., in a damp place near the town end of the sand-hills; Hunstanton, Weybourne and Ranworth, Brundall and Surlingham, Norfolk, *Edwards*; Morayshire, Forres, Aberdeen, *Reuter*.

LEPTOPTERNA, *Fieb.*

A very distinct genus, differing from the other genera with impressed vertices in the bright coloration and the hairiness of the surface. Head transverse, eyes large, prominent, not touching the pronotum, antennæ robust, densely hairy, first joint as long as or longer than the head; pronotum trapezoidal, its sides sinuate and sharp, base emarginate; scutellum large; elytra elongate, subparallel-

sided, fully developed in the ♂, rarely so in the ♀; legs elongate, hairy. There are only three European species, of which we have two in Britain.

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| 1. Colour black, brown and reddish, tibiae with shorter semi-erect hairs | FERRUGATA. |
| 2. Colour black and yellow, tibiae with long erect hairs | DOLOBRATA. |

L. ferrugata, Fall.—Head pronotum and scutellum black in the ♂, a line along the inner margin of each eye, produced to the base of the head, the lateral margins and central line of the pronotum whitish; ♀ with the head pronotum and scutellum pale, two lines down the middle of the head, a spot on each side of the pronotum in front, and the sides and base of the scutellum more or less black; elytra in both sexes pinkish brown, the nerves red; legs ochreous, femora spotted with black. Antennae brown, black at the base in the ♂, finely hairy in the ♂, densely so in the ♀; scutellum very large, in the developed forms as wide as the base of the pronotum; elytra longer than the abdomen in the ♂, about equalling it in the developed ♀, about twice and a half as long as the scutellum in the undeveloped ♀; legs very hairy, but the hairs only semi-erect, and shorter than in *dolobrata*.

L. 8–9 mm.

Common by sweeping in dry grassy places, and generally distributed.

L. dolobrata, Linn.—Head black with five yellow spots in the ♂, or yellow with the disc black in the ♀, hairy, antennae hairy, black in the ♂, dusky brown in the ♀; pronotum clothed with erect hairs, pale, with a black band down each side, leaving the dorsal line and lateral margins pale, these latter sinuate, base nearly straight, rounded at the lateral angles; scutellum not so wide as the base of the pronotum, the posterior angles in the ♀, and these as well as the sides in the ♂, widely black; elytra yellowish in the ♀, orange yellow in the ♂, clothed with

erect hairs, inwardly dusky, the nerves yellow, membrane dusky, fully developed in the ♂, in the ♀ very short; elytra not so long as the abdomen (I have never seen a macropterous ♀); legs clothed with erect dark hairs, femora with rows of black spots; abdomen with longitudinal rows of spots.

L. 8-9 mm.

Very abundant, and generally distributed; occurs in dry grassy localities.

BRYOCORIS, Fall.

Dimorphous in both sexes, in the fully developed form with the head transverse viewed from above, eyes prominent, face nearly vertical, antennæ with the basal joint longer than the vertex, rostrum robust, reaching to about the middle of the mesosternum; pronotum very wide and much raised behind, narrow and with a distinct collar in front, sides straight; elytra flat, subparallel-sided, cuneus very large, membrane with only one basal cell; apical joint of the posterior tarsi, incrassated, arolia very long, divaricate. In the undeveloped form the pronotum is less widened behind, and the elytra are convex, without membrane. The two forms are so dissimilar that I doubt if anyone would suspect their identity unless found together. There is only one European species.

B. pteridis, Fall.—Head and pronotum pitchy brown, a line on each side of the former pale; head shining. Antennæ pale, finely pubescent, apex of the second joint and the third and fourth, which are subequal in length, pitchy brown; pronotum punctured and transversely rugose, dull, base twice as wide as the anterior margin, sides straight; scutellum pitchy brown, raised at the base; elytra pale ochreous, semi-transparent, shining; clavus pitchy brown, corium with a dark transverse band just above the cuneus; cuneus large, with its apical margin

brown, membrane hyaline clouded with brown; legs very pale ochreous, finely pubescent.

Undeveloped form narrow, widened posteriorly, ochreous, head and sometimes the pronotum and scutellum darker; elytra punctured, convex, its sides rounded, membrane wanting.

L. $3\frac{1}{2}$ –4 mm. (developed), $2\frac{1}{2}$ –3 (undeveloped).

On *Pteris* and other ferns. Dr. F. B. White finds it in Scotland "always on *Athyrium filix femina* and *Lastrea dilatata*."

MONALOCORIS, Dahlb.

Not dimorphous, broadly ovate, shining, punctured, convex, face subvertical, rostrum reaching to the posterior coxæ; pronotum with a very narrowly raised anterior collar, sides very slightly rounded, base rounded; elytra short, their sides rounded and narrowly reflexed, cuneus with its external margin rounded, constricted at its union with the corium, membrane with only one cell; apical joint of the tarsi slightly incrassated, arolia very long and divaricate. There is only one species of the genus.

M. filicis, Linn.—Ochreous brown, shining, head, legs and the base of the antennæ paler. Head shining, impunctate, eyes touching the pronotum and projecting beyond the sides of its anterior margin, antennæ with the basal joint slightly longer than the head, second about twice and a half as long as the first, dark at its apex, third and fourth dark, fourth about two-thirds as long as the third, vertex divided from the neck by a rounded ridge; pronotum strongly punctured, much raised posteriorly, with a transverse anterior impression on each side, its anterior raised collar pale, sides nearly straight, base rounded; elytra punctured, finely pubescent, their margins pale, membrane smoky; legs very finely pubescent.

L. $2\frac{1}{2}$ –3 mm.

On ferns; generally distributed and common.

PANTILIUS, Curt.

A very distinct genus, easily known by its broad subparallel form, its deeply sulcate vertex, the very long second joint of the antennæ and the very short third and still shorter fourth, which is much thinner than the third; the pronotum is trapeziform, with a distinct anterior collar, the sides slightly reflexed and sharp, base slightly rounded; elytra with a narrowly reflexed margin, somewhat parallel-sided, cuneus once and a half as long as wide; basal joint of the posterior tarsi short, about as long as the third. There are two Palaearctic species of this genus, of which we have only one.

P. tunicatus, Fab.—Somewhat flat, subparallel-sided, red, or green with a reddish tinge, freckled with small black spots, bearing short black bristles. Head transverse, with the eyes large and prominent, vertex longitudinally impressed, antennæ red or pale, with the basal joint longer than the head, second three times as long as the first, slightly thickened and darkened at the apex, third about equalling the first in length, much narrower than the second, fourth about half the length and width of the third; pronotum transverse, base about twice as long as the anterior margin, sides slightly sinuate, sharp and narrowly reflexed, base rounded, slightly emarginate in the centre; elytra with the side margins narrowly pale, cuneus generally blood-red inwardly and at the apex, membrane dusky, nervures blood red; legs red, or green tinged with red.

L. 8–10 mm.

On *Hazel*, Reigate, Bromley, Wimbledon; *Alders*, Esher, Salisbury, Marshall; Devon, *Parfitt*; "Common on *Birch* in autumn," Norfolk, *Edwards*; *Hazel*, Well Vale, Lincolnshire, *J. E. Mason*; Glanvilles Wootton, Charmouth, *Dale*; Ireland, *Halliday*; *Hazel*, Taff's Well, South Wales, and Mickleham, *Billups*; Bickleigh, Plymbridge, Horrabridge, *Biguell*.

LOPUS, Hahn.

A genus of black or black-brown species, with red and yellow markings. Head viewed from above very transverse, with very prominent eyes, nearly their entire width projecting beyond the lateral margins of the pronotum, face subvertical, antennæ with the basal joint hardly thicker than the second, rostrum reaching to about the posterior coxæ; pronotum trapezoidal, with a distinct collar in front, sides sharp, base slightly rounded; scutellum convex; elytra nearly parallel-sided, longer than the abdomen in the ♂, generally shorter than it in the ♀; posterior tarsi with the basal joint not longer than the second, third joint the longest. We have three British species of the eleven recorded as Palearctic.

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| (4) | 1. Legs without pale rings. | |
| (3) | 2. Sides of the pronotum straight, its disc black | GOTHICUS. |
| (2) | 3. Sides of the pronotum sinuate, its disc with a central pale line | SULCATUS. |
| (1) | 4. Posterior femora and all the tibiæ with a pale ring | FLAVOMARGINATUS. |

L. gothicus, Linn. (var. *superciliosus*, D. & S.).—Black, clothed with erect black hairs, inner orbits of the eyes pale, antennæ black clothed with erect hairs, third and fourth joints subequal, basal joint about as long as the anterior margin of the pronotum; pronotum with the anterior margin rather more than half as long as the base, sides sharp, straight, more or less red, the red colour varying considerably in extent; scutellum black, red towards the apex; elytra coriaceous, punctured, lateral margins pale, cuneus orange red, with its inner apical margin black, membrane black; legs black, clothed with erect hairs, tibiæ sometimes piceous; beneath black, sides of the pronotum, a spot near each coxa, and a line on each side of the abdomen, yellow.

Var. *superciliosus*, D. & S., differs in having the pronotum and cuneus entirely black.

Reigate, Hastings, Woking; on *Rubus idæus*, Norfolk, *Edwards*; Birch Wood, *Marshall*; Glanvilles Wootton, Bournemouth, *Dale*; Knowle, Cannock Chase, *Blatch*; Taff's Well, South Wales, *Billups*; Coombe and New Forest, *Power*.

L. sulcatus, *Fieb.*—Like the preceding in style of coloration, but clothed with much shorter finer hairs; pronotum with its sides sinuate and yellow, and with a more or less wide yellow dorsal line down its centre, and with a deeper transverse impression than in *gothicus*; the scutellum has a central pale stripe and its apical portion is impressed at the base; elytra with a marginal stripe, and the cuneus yellow except at the apex, membrane black, very much shortened in all the females which I have seen; legs black, posterior femora in the ♀ pale near the base, tibiae piceous in both sexes.

L. 6-7 mm.

Hayling Island, on flowers of *Rubus*, etc.; Devon, on *Umbelliferae*, *Parfitt*; Farcham, Hants, *H. Francis*; Ryde, Isle of Wight, *Dale*; Weston-super-Mare, *Billups*; Slapton, on *Senecio*, *Chenopodium* and *Anthyllis*; Wembury, on *Malva*, *Bignell*.

L. flavomarginatus, *Don.* (*miles*, *D. & S.*).—Easily known from either of the preceding by its browner colour, its very fine, pale, decumbent pubescence, which on the antennæ and legs is only observable with a strong power; also by the long fourth joint of its antennæ, which is much longer than the third; the pronotum is much narrower in front. its anterior margin not being half as long as the base, the anterior callosities are clearly defined and shining, and the dorsal line narrow and red, like the lateral margins; the elytra are very narrowly pale at the sides, the cuneus orange, with its inner apical margin brown; all the tibiae and the posterior femora have a pale ring.

L. 7-7½ mm.

Rare; on *Linaria vulgaris*, Halfway Street, Kent, *Douglas*

and *Scott*; Colchester, *Harwood*; Fareham, Hants, early July, *H. Francis*; Bolt Head, Devon, *Polperro, Marshall*; Ireland, *Haliday*.

MIRIDIUS, Fieb.

Elongate oval, face nearly horizontal, eyes touching the pronotum, viewed from above longer than wide, basal joint of the antennæ thick, long, slightly curved and pilose, once and a half as long as the head, rostrum very long, reaching to the middle of the abdomen; pronotum trapeziform, with a distinct anterior collar-like constriction, sides sharp, sinuate, base rounded, slightly sinuate in the centre; scutellum rather small; elytra long, their sides slightly rounded, cuneus long; legs elongate, tibiæ with fine spine-like hairs.

There is only one European species.

M. quadrivirgatus, Costa.—Pale ochreous, two longitudinal stripes on the head, four on the pronotum, two on the scutellum, two on the clavus, and two or three on the corium and the cuneus inwardly, brownish red. Antennæ finely pubescent, brown, basal joint with fine bristly hairs; pronotum at its base twice as wide as at the anterior margin, slightly raised posteriorly; scutellum convex, membrane smoky with a darker cloud on each side, its nervures pale; legs ochreous, more or less freckled with brown.

L. 11-12 mm.

Deal, Lowestoft, Hastings; Hurst Green, Bexhill, *Butler*; Bideford, *Porfitt*; Isle of Wight, Cornworthy, *Botus Fleming, Marshall*; Beer Ferris, *Bignell*; Sheppey, *Champion*; Lulworth, *Dale*; Deal, and Barry Isle South Wales, *Billups*.

PHYTOCORIS, Full.

A genus of elegantly shaped green, grey and brown species, mottled with darker colour and clothed with fine soft pubescence, with very long antennæ, generally banded legs, and mottled or irrorated membranes; eyes large, pro-

ninent, round, face nearly vertical except in *ulmi* and *varipes*, basal joint of the antennæ elongate, with a few bristly hairs on its inner margin, rostrum reaching beyond the base of the abdomen; pronotum trapezoidal, its anterior margin callosely raised; scutellum convex; elytra more or less elongate, parallel-sided or slightly rounded. Membrane irrorated with fine black spots, giving it a mottled appearance; legs with the posterior femora elongate and slightly thickened, tibiæ elongate, with a row of fine hair-like bristles along their outer margin.

We have eight species in this country of the forty-one recorded by Puton as Palæarctic; but the majority of these are meridional and quite unlikely to occur with us.

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| (12) | 1. | Intermediate tibiæ with transverse bands. | |
| (3) | 2. | Basal joint of the antennæ with three longitudinal black stripes | POPULI. |
| (2) | 3. | Basal joint of the antennæ marbled with black, but without black longitudinal lines. | |
| (7) | 4. | Black bands of the intermediate tibiæ narrower than the intervening white spaces. | |
| (6) | 5. | Sides of pronotum nearly always widely black, elytra not very long, clearly mottled with black except in extreme varieties, posterior femora normal | TILLE. |
| (5) | 6. | Sides of pronotum not widely black, elytra very long and obscurely mottled, posterior femora very long and slender | LONGIPENNIS. |
| (4) | 7. | Black bands of the intermediate tibiæ wider than the intervening white ones. | |
| (9) | 8. | First joint of the antennæ longer than the fourth | DIMIDIATUS. |
| (8) | 9. | First joint of the antennæ subequal to or shorter than the fourth. | |
| (11) | 10. | First joint of the antennæ nearly as long as the head and pronotum together | REUTERI. |
| (10) | 11. | First joint of the antennæ not nearly so long as the head and pronotum together | PINI. |
| (1) | 12. | Intermediate tibiæ without transverse bands. | |
| (14) | 13. | Basal joint of antennæ with long bristly hairs not thickened | ULMI. |
| (13) | 14. | Basal joint of antennæ slightly thickened, bristles very short and fine | VARIPIES. |

P. populi, Linn. (var. *distinctus*, D. & S.).—Grey or ochreous, mottled with darker brown or black, sometimes (var. *distinctus*) with the elytra entirely black. Eyes very prominent, vertex in the male about as wide as each eye, in the ♀ wider, basal joint of antennæ with three black longitudinal stripes, second joint about twice as long as the first, fourth slightly shorter than the third; pronotum with the sides slightly sinuate, more or less black posteriorly and at the sides, base slightly emarginate in the centre; scutellum with the sides and a central line, widening at the apex, pale; elytra usually more or less mottled with black, and clothed with fine silvery hairs intermixed with the darker ones, sometimes entirely black, with only a slight pale spot near the cuneus, membrane dark, marbled and irrorated with grey; femora marbled with black, tibiæ with black bands, those of the intermediate pair about as wide as the intervening white ones.

L. 6–7 mm.

I cannot, after comparison of many specimens, distinguish var. *distinctus* except by colour, and I have intervening varieties which I am quite unable to refer to either with certainty.

On poplars; not very common, but generally distributed.

P. tiliæ, Fab. (var. *marmoratus*, D. & S.).—Green or greenish yellow fading to yellowish after death, more or less spotted and marbled with black; basal joint of the antennæ spotted with black, but without black longitudinal lines, slightly longer than the apical joint; pronotum almost always with a wide, well-defined, black band on each side, often continued along the base; scutellum and elytra marbled with black, varying much in the extent and arrangement of the markings; membrane pale, irrorated with grey, giving it a marbled appearance; femora marbled with black, tibiæ with black bands, those on the intermediate pair very distinct and clearly narrower than the intervening white ones.

L. 6 mm.

On limes and other trees, not rare and generally distributed.

P. longipennis, *Flor. (dimidiatus, D. & S. nec Kbm.)*.

—Longer, narrower, paler and more obscure in its mottling than any of our other species of this genus. Head ochreous, eyes very large and transverse in the ♂, each being much wider than the vertex between them; in the ♀ the eyes are not transverse and are slightly narrower than the vertex; antennæ very long, longer than the entire insect, first joint as long as the head and pronotum together; pronotum greyish ochreous, with darker markings; scutellum with a pale central line; elytra very long, parallel-sided, greyish ochreous, obscurely mottled with darker colour, membrane irrorated and marbled with grey; legs with the femora very long and slender, marbled, intermediate tibiæ with very distinct black bands, much narrower than the intervening white ones.

L. 7-7½ mm.

Reigate, Hastings, Wimbledon on *Hazel*; Blackheath, *Douglas and Scott*; Norfolk, *Edwards*; Corton near Lowestoft, *Butler*; on *Hazel*, Bath, *Bluthwayt*; St. Ives, Well Vale and Muckton, Lincolnshire, *J. E. Mason*; Bewdley, Matlock, *Blatch*; Edinburgh, Forres, Perth, *Reuter*; Caterham, Chattenden, *Champion*; Oxshott, *Billups*; Ireland, *Haliday*; Eastham Wood near Liverpool, *J. W. Ellis*.

P. Reuteri, *Saund. (crassipes, D. & S. nec Flor.)*.—

Smaller, shorter and darker than the preceding; basal joint of the antennæ shorter than the head and pronotum, second about once and a quarter as long as the third, first and fourth joints subequal; pronotum with the sides and base, and sometimes the dorsal line towards the base, darker; scutellum with a pale line at the apex, sometimes almost entirely pale; elytra brown, marbled with lighter colour, or sometimes almost entirely dark, cuneus dark, corium with the usual pale patch just above it; legs with

the femora marbled, tibiæ banded, intermediate pair with the dark bands wider than the pale ones.

L. 6 mm.

On fruit trees, etc.

Reigate, Wimbledon, Chobham; Norfolk, *Edwards*; oaks, Lincolnshire, *J. E. Mason*; London District, Mickleham, *Champion*; Cardiff, *Billups*; Dartford Brent, *Douglas and Scott*.

P. dimidiatus, *Kbm.* (*dubius*, *D. & S.*; *populi pars*, *Saund. Synops.*).—Very like some varieties of *populi*, but distinguishable by the absence of the longitudinal black lines on the basal joint of the antennæ; closely allied also to *Reuteri*, but rather more slender, more mottled, less brown in colour, and with the third joint of the antennæ proportionately shorter and the first joint longer, being distinctly longer than the fourth; from *pini* the long basal joint, which is as long as the pronotum and head to the brow of the forehead, distinguishes it at once; from *longipennis* its shorter antennæ and legs, and more robust form, will separate it.

L. 7 mm.

Reigate, Bromley, on oaks; Norfolk, *Edwards*; Forres, Edinburgh, *Reuter*.

P. pini, *Kbm.*—Shorter and stouter than any of the preceding, ochreous brown, mottled with darker brown. Antennæ with the basal joint hardly longer than the pronotum, and subequal to or shorter than the apical joint; pronotum wider in front than in most of the species, its sides straight; mottling of the elytra very obscure; femora mottled, tibiæ with obscure bands, the dark bands of the intermediate pair much wider than the pale ones.

L. 6 mm.

On fir trees, Pitlochry, *Norman*; Perth, Dunkeld, Forres, Braemar, *Dr. B. White*.

P. ulmi, *Lin.* (*divergens*, *D. & S.*).—Reddish brown, elytra mottled with patches of white pubescence; vertex in

the ♂ slightly wider than each eye, in the ♀ about twice as wide as each, basal joint of the antennæ slender, pale, mottled with brown, about as long as the pronotum and the head to the front of the eyes, with long fine bristles, especially on the inner side, second joint a little more than twice as long as the first, fourth slightly shorter than the first; pronotum narrow in front, sides sinuate with a few bristly hairs near the anterior margin; scutellum rather shining, pale reddish ochreous; elytra nearly unicolorous except for the pubescent mottling, elongate, parallel-sided in the , shorter with the sides rounded in , their lateral margins towards the apex and the apical half of the cuneus blood-red; membrane marbled with grey; femora marbled with brown, tibiae pale except at the base.

L. $6\frac{1}{2}$ –7 mm.

Common on *elms*, and generally distributed.

P. varipes, *Boh.* (*ulmi*, *D.* & *S. nec Linn.*).—Can only be confounded with the preceding, which it superficially resembles, especially in colour. The thicker basal joint of the antennæ, with scarcely observable bristles, the pale central line of the head, the three short pale lines on the anterior part of the pronotum, the wider vertex, the pale central line of the scutellum, the unmottled elytra with darker longitudinal stripes, and the entirely red cuneus will, however, distinguish it easily.

L. 6– $6\frac{1}{2}$ mm.

Common and generally distributed, occurs on various plants.

CALOCORIS, *Fieb.*

(*Derocoris*, *D.* & *T.*)

An extensive genus, very variable in the form and colour of its species, some being highly coloured, others of a dull greyish green or brown. Head not divided from the neck by a ridge or rounded elevation, rostrum not reaching beyond the posterior coxæ, antennæ variable; pronotum

with a narrow raised collar; scutellum convex; elytra parallel-sided or with the sides slightly rounded; ♂ and ♀ generally very similar; tibiæ with a row of fine spine-like hairs, although very short in some species; basal joint of the posterior tarsi slightly longer than the second. We have twelve species of the sixty-seven recorded by Puton, i.e. including *Pycnopterna* and *Megacelum*, which he gives as distinct genera.

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| (22) 1. | Antennæ inserted near the apex of the eyes. | |
| (19) 2. | Rostrum reaching beyond the intermediate coxæ. | |
| (14) 3. | Species not green. | |
| (13) 4. | Species not brick red. | |
| (6) 5. | Apical joint of antennæ much shorter than the first | STRIATELLUS. |
| (5) 6. | Apical joint of antennæ longer than the first. | |
| (8) 7. | Corium entirely dark, unicolorous | FULVOMACULATUS. |
| (7) 8. | Corium not entirely dark. | |
| (12) 9. | Scutellum pale, or with pale markings. | |
| (11) 10. | Elytra black with yellow markings | SEXGUTTATUS. |
| (10) 11. | Elytra greenish with red stripes | ROSEOMACULATUS. |
| (9) 12. | Scutellum entirely dark | SETICORNIS. |
| (4) 13. | Species brick red | TIGINENSIS. |
| (3) 14. | Species green. | |
| (16) 15. | Third and fourth joints of the antennæ as thick as the second | CHENOPODIIL. |
| (15) 16. | Third and fourth joints of the antennæ thinner than the second. | |
| (18) 17. | Larger, apical joint of the antennæ longer than the third | ALPESTRIS. |
| (17) 18. | Smaller, apical joint of the antennæ shorter than the third | BIPUNCTATUS. |
| (2) 19. | Rostrum not reaching beyond the intermediate coxæ. (Subg. <i>Pycnopterna</i> .) | |
| (21) 20. | Basal joint of antennæ longer than the head | STRIATUS. |
| (20) 21. | Basal joint of antennæ shorter than the head | MARGINELLUS. |
| (1) 22. | Antennæ inserted near the middle of the eyes. (Subg. <i>Megacelum</i> .) | INFUSUS. |

C. striatellus, *Fab.* (var. *fornicatus*, *D. & S.*).—Pale yellow, shining, a central stripe on the head, the antennæ towards the apex, four spots on the disc of the pronotum,

and the base except in the middle, black; scutellum black at the extreme base; elytra with the nerves margined with brown on each side, its sutures and margins also dark, cuneus black at the apex. Antennæ with the basal joint not incrassated, third and fourth together about equalling the second; pronotum with a very narrow callose collar, base rounded laterally; elytra very finely pubescent; legs orange, femora with a paler band in the centre, posterior pair slightly incrassated, apex of the tibiæ and of the tarsi darker.

In var. *fornicatus*, *D. & S.*, the colour is of a redder hue, and the black markings less distinct; those of the elytra nearly absent.

L. 8 mm.

Common and generally distributed on oaks.

C. fulvomaculatus, *De G.*—Darker olive brown ♂, paler ♀, sparingly clothed with fine shining golden pubescence, cuneus outwardly pale ochreous, with a reddish tint in the ♀; apex of the second joint of the antennæ, the centre of the head, and two spots on the pronotum, black; these latter are hardly observable in the ♂. Basal joint of the antennæ incrassated, about as long as the head, third and fourth narrower than the second, subequal, and together longer than that joint; collar of the pronotum only slightly raised, sides sinuate; elytra parallel-sided in the ♂, widened behind the middle in the ♀; membrane dark with a lighter spot near the apex of the cuneus; femora mottled with darker brown, posterior pair incrassated, tibiæ ochreous, with short black spines.

L. 7 mm.

On *Black Currant bushes*, Darenth, *Douglas and Scott*; *Leatherhead, Billups*; Reigate, Barnstaple on *Umbelliferæ*; Glanvilles Wootton and Portland, *Dale*; on *Hazel*, Bath, *Blathwayt*; New Forest, Dorchester, and Knowle, *Blatch*; *Ash*, Exeter, *Parfitt*; on *Umbelliferæ*, Cornworthy and Botus Fleming, *Marshall*; Guestling and Hastings, *Collett*;

Wymondley, Herts, *Butler*; co. Antrim, *Rev. W. F. Johnson*; Caterham, *Champion*; Bickleigh Vale and Horrabridge, Devon, *Bignell*; *Birch*, July, Strathglass, *F. B. White*.

C. sexguttatus, *Fab.*—Black, shining, collar of pronotum, the margin on each side towards the base, a wide dorsal line, the apical half of the scutellum, the apex of the clavus, and the lateral margin of the elytra, the colour of which spreads on the basal half, very pale yellow, cuneus orange, its apex black, legs with the tibiæ pale. Basal joint of antennæ slender, not thicker than the second, third and fourth thinner, together longer than the second; pronotum very narrow in front, its sides sinuate; elytra punctured, nearly parallel-sided, membrane black, with a hyaline spot below the apex of the cuneus; femora brownish black, posterior pair slender.

L. 7 mm.

By sweeping, abundant in some places, Ilfracombe; "common" near Barlaston, Staffordshire, *J. W. Ellis*; Glanvilles Wootton, *Dale*; Headley Lane, Canterbury, York, Llantrissant, *Billups*; Norfolk, *Edwards*; Redhill, Surrey, *J. Linnell*; Repton, *Fowler*; Ambleside, *Butler*; Cornworthy, Colvend, Kirkcudbrightshire, *F. B. White*; Kidderminster, Groby, Leicester, *Marshall*; Pitlochry, Forres, *Norman*; Caterham, *Champion*; Bickleigh Vale, Shaughbridge, Horrabridge, Devon, *Bignell*; Lucan, co. Dublin, *J. M. Browne*; Wymondley, Herts, *Butler*.

C. roseomaculatus, *De G. (ferrugatus, D. & S.)*.—Greenish-ochreous, clothed with short, black hairs, head and pronotum more or less tinged with red or brown, the head black in the ♂ except at the sides, scutellum with a central black line, elytra, clavus, except at the apex and along the central nerve, and the corium posteriorly between the nerves, red or brownish, membrane dusky, nervures pale. Basal joint of the antennæ slightly incrassated, third and fourth distinctly slenderer than the second; pronotum

with a narrow callose collar, sides straight, base slightly rounded, surface punctured; elytra considerably narrowed posteriorly; posterior femora incrassated, sometimes freckled with brown.

L. 8 mm.

Common, by sweeping in dry places, and generally distributed.

C. seticornis, *Fab.*—Dark brown, clothed with fine pale golden pubescence, second and third joints of the antennæ and sometimes the collar, dorsal line and extreme base of the pronotum pale ochreous, base of the corium outwardly also pale, cuneus blood-red, its apex black, membrane dark brown, tibiæ and the apices of the femora ochreous, beneath with a spot near each coxa pale. Basal joint of antennæ slender, hardly thicker than the second, which is only slightly thicker than the third and fourth; pronotum obsoletely punctured, its sides nearly straight; elytra subparallel-sided, finely punctured; femora hardly incrassated.

L. 8–8½ mm.

I have one variety in which the corium is nearly entirely ochreous.

Rare. Thornes Bay, Luccombe, Isle of Wight, *Power*; Freshwater, Isle of Wight, *F. S. Saunders*; Chattenden, *Champion*; Filey Yorks, Charmouth Dorset, *Fowler*.

C. ticinensis, *Mey.*—Pale brick red, clothed with fine pale pubescence, rarely with a greenish tinge in places, sometimes with two black spots on the pronotum, and occasionally with the inner apical angle of the corium dark. Head shining, antennæ with the third and fourth joints hardly thinner than the second, first joint slightly thickened; pronotum with a very narrow callose collar, punctured, slightly shining, anterior callosities well-defined, sides nearly straight; elytra dull, with the lateral margins slightly rounded; femora slightly darkened, tibiæ pale ochreous with black bristles along their

outer margin, abdomen beneath sometimes black in the centre.

L. 7 mm.

Rare; in marshy places, Gomshall, Chobham; Norfolk, *Edwards*; Wicken Fen, *Blatch*; Leigh Woods, Clifton, *Reed*; Knighton Heath, *Dale*; Chilworth, Surrey, *Butler*.

C. alpestris, *Mey.*—One of our largest species, entirely green, clothed with fine brownish black hairs, eyes not touching the pronotum, first joint of the antennæ slender, but slightly thicker than the second, which again is thicker than the third and fourth, fourth a trifle longer than the third; third and fourth together subequal to the first and second; pronotum narrow in front, sides nearly straight, anterior callosities well marked; scutellum very convex; elytra very long and parallel-sided in the male, their sides slightly curved in the ♀, cuneus long, membrane slightly smoky; posterior femora slender.

L. 10–10½ mm.

Rare. Burton-on-Trent, *Brown*; Forres, *Norman*; Gibside, *Bold*.

C. chenopodii, *Fall.*—Greyish green, clothed with pale hairs, the extreme lateral margin of the elytra and the corium in the centre often dark, differs from either of the preceding in the thicker antennæ, the third and fourth joints of which are as thick as the second, the fourth scarcely half as long as the third; pronotum very narrow in front and wide behind, especially in the ♂, often with two black spots on the disc posteriorly, surface transversely wrinkled; scutellum generally with two dark discal lines; elytra parallel-sided in the ♂, the sides slightly rounded in the ♀; cuneus paler than the corium, membrane slightly dusky, nervures darker; femora freckled with brown, posterior pair slender, tibiæ with bristly hairs and small black spots.

L. 8½–9 mm.

On *Chenopodium*, *Ononis*, etc., common and generally distributed, but not recorded from Ireland or Scotland.

C. bipunctatus, *Fab.*—Green, clothed with rather thick black hairs, pronotum generally with two small black spots on the disc, elytra in the ♂ sometimes more or less reddish brown between the nerves, membrane dusky, nervures pale, femora more or less freckled with brown. Basal joint of the antennæ scarcely thickened, third and fourth slenderer than the second, together about equalling it in length; pronotum shining, much raised posteriorly, with a narrow raised collar, sides nearly straight, surface slightly wrinkled transversely; elytra with the sides slightly rounded; posterior femora slightly incrassated.

L. 7 mm.

Abundant everywhere on various plants in the summer.

(SUBG. MEGACCELUM, *Fieb.*)

C. infusus, *H. Schf.*—Shining, glabrous, orange yellow. Head longitudinally impressed on the vertex, first joint of the antennæ scarcely thickened, the rest subequal in width, fourth slightly longer than the first, third slightly shorter than the second; pronotum with a narrowly-raised collar, sides nearly straight, base sometimes with a wide black band; scutellum varying from orange yellow to entirely black; elytra subparallel-sided, in some specimens unspotted, in others with a spot above the cuneus, or with a wide black band across the apex of the corium; membrane dark; legs in dark examples orange red, tibiæ darker; abdomen varying from yellow to nearly black.

L. 8 mm.

On oaks.

Reigate, Charlwood, Gomshall, Wandsworth, Bromley; Lewisham, *Douglas and Scott*; Lee, Oxshott, Chobham, Loughton, *Billups*; Knighton Heath, *Dale*; Ashted,

Champion ; Norfolk, *Edwards* ; Devon, *Parfitt* ; Wy-
mondley, Herts, Barnet, Hastings, *Butler*.

(SUBG. PYCNOPTERNA, *Fieb.*)

C. striatus, *Linn.*.—Subelongate, head and pronotum black, a line near each eye, and a spot in the centre of the pronotum, sometimes extended into a transverse band, yellow ; first joint of the antennæ slender, black or red, second black, twice and a half as long as the first ; third black, yellow at the base ; fourth black, four-fifths as long as the third ; eyes not touching the pronotum ; pronotum elongate, with rather a long, very slightly raised collar, sides sinuate, margins of the anterior acetabula raised so as to be visible from above as prominences on each side of the pronotum in front ; scutellum black, sometimes yellow at the sides ; elytra brownish, its nerves only, in dark examples, and the interstices more or less, in pale ones, pale orange yellow, cuneus bright orange, sometimes clouded with brown, membrane brown, nerves orange ; legs orange red, femora towards the apex brown ; tibial spines extremely short.

L. 10 mm.

Darenth Wood, Tunbridge Wells, *Douglas and Scott* ; Bewdley, Dean Forest, *Blatch* ; *Alders*, Dunsford, Devon, *Parfitt* ; Great Wood, Keswick, *Marshall* ; Guestling, *Collett* ; Abbotswood, *Butler* ; Pitlochry, Forres, *Norman* ; Rannoch, *F. B. White* ; Aviemore and New Forest, *Champion* ; Headley Lane and Llantrissant, *Billups* ; Glanvilles Wootton, Portland, *Dale* ; Bickleigh Vale, Horrabridge, Cann Wood, Devon, *Bignell* ; Ireland, *Haliday*.

C. marginellus, *Fab.*.—Black with yellow markings. Head with a pale streak near each eye, antennæ with the basal joint short, but not much thicker than the second, second nearly four times as long as the first ; pronotum with the sides sinuate, collar and three lines or longitudinal basal

spots yellow, base rounded ; scutellum and elytra black ; clavus and corium outwardly, and sometimes two pale lines on the disc of the latter, yellow ; cuneus yellow or orange ; membrane black ; legs pitchy brown, femora slender, tibiæ rather paler, spines very short ; beneath with a yellow spot near the coxæ, and a pale band on each side of the abdomen.

L. 8 mm.

Apparently very rare, I know of only one recorded locality for it. "Charing, Kent, rare," *Rev. T. A. Marshall*. I have an old specimen without locality from Harding's Collection, and Douglas and Scott record two specimens, also without localities.

ONCOGNATHUS, *Fieb.*

Closely allied to *Calocoris*, but distinguished by its longer rostrum, which reaches to the centre of the abdomen, and by the longer basal joint of the posterior tarsi, which is twice as long as the second. There is only one recorded species.

O. binotatus, *Fab.*—♂ ochreous yellow, ♀ pale greenish ; both sexes with black markings, the black more extensive in the ♂ than in the ♀. Head shining, a spot on each side of the vertex, and the central lobe of the face black ; antennæ dusky, basal joint about as long as the head, third and fourth together about equal to the second ; pronotum trapezoidal, punctured, shining, a broad black band down each side in the ♂, a spot on each side in the ♀ black ; scutellum pale, its basal angles black ; elytra finely pubescent, punctured, in the ♂ with the clavus, except at the apex, and the corium inwardly, black, in the ♀ varying from a coloration somewhat like that of the ♂, though paler, to entirely pale green ; membrane dark fuscous, nervures pale ; legs dusky, greenish ochreous.

L. 6-7 mm.

Common by sweeping by road-sides, etc., and generally distributed.

DICHROOSCYTUS, *Wieb.*

Subelongate, elytra parallel-sided, vertex of the head carinated posteriorly on each side near the eye; eyes prominent, rostrum reaching to about the third abdominal segment, antennæ slender, first joint about as long as the vertex between the eyes, second thicker in the male than in the ♀; pronotum transverse, with a narrow raised collar; tibiæ with very fine spines, posterior femora slightly incrassated, apical joint of the tarsi very long, almost equalling the first and second together. We have only one British species, three being recorded from Europe.

D. rufipennis, *Fall.*—Shining, green, pubescence very sparse; elytra blood-red, with the margins narrowly green; antennæ with the second joint as long as the third and fourth together; pronotum with the sides slightly rounded, base nearly straight; scutellum convex, sometimes with an orange tinge; elytra parallel-sided, membrane slightly smoky, nervures red; legs green.

L. 6 mm.

On *Conifers*, Reigate, Chobham, Bromley; Norfolk, *Edwards*; Well Park, Lincolnshire, *J. L. Mason*; Nunton near Salisbury, *Marshall*; Braemar at 1200 feet, *F. B. White*; Pitlochry, *Forres, Norman*; Scarborough, *Lawson*; Bournemouth, Knighton Heath, *Dale*.

PLESIOCORIS, *Fieb.*

Elongate oval, elytra subparallel-sided in the ♂, sides rounded in the ♀, vertex of the head carinated posteriorly; rostrum reaching to the intermediate coxæ; antennæ rather robust, first joint rather longer than the vertex between the eyes, third and fourth together about equal in length to the second; pronotum transverse, trapeziform, transversely wrinkled, with a narrow raised collar and two strongly marked callosities behind it.

P. rugicollis, *Fall.*—Bright green; head, pronotum in front, sides of elytra and legs yellow. Antennæ with the third and fourth joints and the extreme apex of the second, black; fourth joint about two-thirds as long as the third; pronotum only slightly raised posteriorly, strongly rugose transversely, sides straight; scutellum slightly convex towards the apex, raised down the middle; elytra indefinitely punctured, membrane nearly hyaline, nervures green; tarsi black at the apex or entirely so, sometimes also the apex of the tibiæ of the same colour.

L. 6 mm.

On willows and sallows, local; Woking, Deal; Saltcoats, *Douglas*; Walkham Valley, Devon, *Bignell*; Wells, Lincolnshire, *J. E. Mason*; Wallasey Sandhills, *J. W. Ellis*; Aviemore, *Champion*; Pitlochry, *Norman*; Forrabay and Crosby, *F. Archer*.

LYGUS, *Hahn.*

(*Orthops*, *Fieb.*)

This rather extensive genus consists of a number of species of very similar general facies, the most aberrant of our species being *L. pabulinus*, belonging to a little section of three species, of which it is our only representative; these differ from the others by the incomplete carina at the back of the head, which is only visible near each eye; the old subgenus *Orthops* is only distinguishable by the shorter antennæ.

Oval or elongate oval. Head with the face subvertical, vertex carinated entirely or in part; rostrum reaching to about the third pair of coxæ; pronotum convex, with a narrowly raised collar, base much raised; elytra with the sides more or less rounded; tibiæ with fine, sometimes black spines, second joint of tarsi slightly longer than the first.

- (10) 1. Green, antennæ very long and slender,
legs green.

- | | | |
|------|--|---------------|
| (3) | 2. Vertex carinated only near the eyes, spines of the tibiæ very fine, hardly noticeable | PABULINUS. |
| (2) | 3. Vertex carinated throughout, tibial spines distinct. | |
| (7) | 4. Tibial spines strong and black, not rising from black spots. | |
| (6) | 5. Cuneus entirely green | LUCORUM. |
| (5) | 6. Cuneus black at the extreme apex | SPINOLE. |
| (4) | 7. Tibial spines fine, brown, rising from black spots. | |
| (9) | 8. Clavus more or less brown | VIRIDIS. |
| (8) | 9. Clavus entirely green | CONTAMINATUS. |
| (1) | 10. Not green, or if green with the antennæ not very long and slender, or with the legs orange red. | |
| (24) | 11. Membrane not irrorated. | |
| (23) | 12. Species not orange red. | |
| (14) | 13. Femora orange red, cuneus entirely green | LIMBATUS. |
| (13) | 14. Femora not orange red, or with cuneus red at the apex | |
| (16) | 15. Species large, robust, 5-6½ mm. | PRATENSIS. |
| (15) | 16. Species small, 3½-4½ mm. | |
| (18) | 17. Elytra with a wide semicircular dark band posteriorly | VISCICOLA. |
| (17) | 18. Elytra without a semicircular dark band. | |
| (20) | 19. Second joint of antennæ more than twice as long as the third | CERVINUS. |
| (19) | 20. Second joint of antennæ not quite twice as long as the third. | |
| (22) | 21. Pronotum longer, its sides in front gradually converging to the anterior collar. | KALMII. |
| (21) | 22. Pronotum shorter, its sides in front rounded, suddenly converging to the anterior collar | PASTINACÆ. |
| (12) | 23. Species orange red | RUBRICATUS. |
| (11) | 24. Membrane irrorated with grey dots | ATOMARIUS. |

L. pabulinus, *Linn.*.—Green, elongate oval, slightly shining, punctured, clothed with pale hairs; antennæ with the apex of the second joint and the third and fourth joints black, basal joint about as long as the head, third joint about three-quarters as long as the second, fourth joint about three-quarters as long as the third; pronotum with a narrow raised collar, sides nearly straight, base rounded, anterior callosities strongly developed; scutellum transversely rugose; elytra elongate, their sides

slightly curved, membrane with a longitudinal cloud below the apex of the cells; femora elongate, tibiæ with very fine, scarcely noticeable bristles.

L. 6 mm.

Common and generally distributed on nettles and other plants; generally fades to yellowish brown after death.

L. contaminatus, *Fall.* (*sulcifrons*, *D. & S.*).—Green, clothed with pale hairs, eyes very prominent, vertex between the eyes in the ♂ much narrower than each eye, in the ♀ about as wide as the eye; antennæ with the apex of the second joint and the third and fourth brown, third and fourth together subequal to the second; pronotum very convex and much raised posteriorly, punctured, transversely wrinkled, sides and base rounded; scutellum transversely wrinkled; elytra finely and closely punctured; corium with a more or less extensive dark transverse spot above the inner angle of the cuneus, membrane dusky, with a darker spot near the apex of each cell, another near the apex of the cuneus, and sometimes one on the apical margin; tibiæ with short brown spines rising from black spots.

L. $6\frac{1}{2}$ –7 mm.

On *birch-trees*, Woking, Reigate; Barnet, Sevenoaks, Ewhurst, *Butler*; Weybridge, *Phillips*; Darenth, Dartford, Shirley, Mickleham, *Douglas and Scott*; Norfolk, *Edwards*; Knowle, Bewdley, *Blatch*; St. Ives, Cornwall, *Mason*; Forres, *Norman*; Armagh, *Johnson*.

L. viridis, *Fall.* (*contaminatus*, *D. & S.*).—Extremely like the preceding, but distinguishable at once by its smaller eyes and wider vertex; in the ♂ the vertex between the eyes is about as wide as each eye, in the ♀ much wider; the clavus also is brown, or partly brown, instead of wholly green as in *contaminatus*, and the spot at the apex of the corium is generally larger.

L. $6\frac{1}{2}$ –7 mm.

Hastings; Croydon, Shirley, Darenth, Mickleham, Esher,

Douglas and Scott; Barnet oaks, *Ewhurst, Butler*; Norfolk, *Edwards*; Trench Woods, Dorchester, *Blatch*; Forres, *Norman*; Plymbridge, Devon, *Bignell*.

L. limbatus, *Full.*—Allied to the preceding, but shorter, paler and of a yellower colour, with the black markings more pronounced, recognizable by the orange-red femora. In some varieties the scutellum and the base of the pronotum are nearly black, the clavus brown, and the apical spot of the corium very large and black. In some continental specimens the base of the pronotum is widely black, as well as the whole of the clavus. There are generally two darker red rings at the apex of the posterior femora; tibiæ pale, with black bristles rising from black spots.

L. 5 mm.

I know of only one locality for this pretty species, Wimbledon Common, where a few specimens were taken by my nephew and myself in August, 1880, off *Salix*.

L. lucorum, *Mey.* (var. *nigro-nasutus*, *Reut. nec Stål.*).—Short oval, very convex, green, clothed with pale hairs, shining, punctured, vertex between the eyes about as wide as the eye itself, central lobe of the face sometimes black; pronotum much raised posteriorly and very convex, deeply and largely punctured, base rounded; scutellum transversely rugose; elytra very finely and closely punctured, its sides rounded, corium above the inner angle of the cuneus sometimes with a dark spot, cuneus entirely green, membrane dusky, with darker spots; tibiæ with black spines, not rising from black spots, femora rarely ringed.

L. 5–5½ mm.

On *Spiræa* and other plants; not rare. Hastings, Reigate, Southwold; Norfolk, *Edwards*; Bexhill, Barnet, Shalford, *Butler*; Barnstaple, *Marshall*; Bickleigh, Horrabridge, Devon, *Bignell*; Taff's Well, South Wales, *Billups*; Achilty and Colvend, *F. B. White*. Var. *nigro-nasutus* has occurred at Corton, near Lowestoft, *Butler*.

L. Spinolæ, *Mey.*—Very like *lucorum*, but rather

larger and paler in colour and with the extreme apex of the central lobe of the face and of the cuneus black, membrane paler; posterior femora with two narrow brown rings at the apex, tibiæ with black spines not rising from black spots.

On *Spiræa*, etc., Woking, Bromley, Reigate, Chobham; Headley Lane, *Billups*; Hastings, Lewes, Sevenoaks, Barnett, Wymondley, Shalford, Fritton and Corton, Suffolk, *Butler*; Norfolk, *Edwards*; on *Myrica*, Strathglass, *F. B. White*; Tilgate, Caterham, Esher, *Champion*.

L. pratensis, *Fab.* (var. *campestris*, *Fab.*).—A most variable species, usually testaceous, more or less marked with darker colour; some specimens, however, are black, others almost entirely pale green, others again reddish brown, with darker markings. It varies also much in puncturation and brilliancy of surface. The characters by which it may be known from its congeners are, the comparatively short antennæ compared with any of the preceding species, which do not reach beyond the apex of the clavus; its much larger size compared with any of the species of the *Orthops* group; the very fine short spines of the tibiæ, and the two dark rings at the apex of the posterior femora.

L. 5–6½ mm.

The race or variety *pratensis* has the elytra much more sparsely punctured and the punctures larger, and is generally a more convex and more brightly coloured insect; *campestris* has the elytra very closely punctured, and is generally dull brown or greenish. Both forms are common and generally distributed.

L. viscicola, *Put.*.—Short oval, greenish yellow, generally the base of the pronotum, the scutellum chiefly, the base of the elytra and a broad semicircular band at the apex often uniting with it at the sides, red-brown, thus leaving a small discal patch or band, common to both elytra, in the middle; cuneus pale, its inner margin and apex blood-red; femora red, with two darker apical rings. Antennæ

with the third and fourth joints together considerably shorter than the second; pronotum strongly punctured; scutellum wrinkled transversely, sides and apex more or less pale; elytra finely and closely punctured, clothed with pale hairs; membrane dusky, the cells, except at the apex, a spot below the apex of the cuneus, and a transverse central band, clear; tibiæ with very fine bristles; abdomen green.

L. 4 mm.

Taken in some numbers by Dr. Chapman off mistletoe near Hereford, also by Mr. Edwards at East Carlton, near Norwich, by Mr. Dale in Dorsetshire, and by Mr. Bignell at Walkham Valley, Devonshire.

L. pastinacæ, *Full*.—Short oval, shining, green, more or less marked with brown or black, vertex between the eyes, in both sexes, nearly twice the width of the eye, face often with a dark centre, third and fourth joints of the antennæ black, together equalling the second, second black or black only at the apex; pronotum strongly punctured, sides rounded in front, suddenly converging to the anterior collar, disc and hind angles sometimes brown, entire base occasionally black; scutellum entirely green or with a small basal black triangle; elytra distinctly and rather largely punctured, clavus, and often an apical band on the corium, brown, or sometimes black, cuneus green, its apex rarely brown or black, membrane scarcely dusky; abdomen green, more or less spotted with black; legs green, in some very dark varieties the posterior femora have two dark rings.

L. $3\frac{1}{2}$ –4 mm.

On *Pastinaca sativa*, and probably other umbelliferæ; abundant in many places, and generally distributed.

L. Kalmii, *Linn.*—Like some dark varieties of the preceding, but with the ground colour testaceous, not green, rather more elongate in shape, the pronotum longer, its sides gradually converging to the anterior collar, elytra more closely punctured, and the posterior femora with two apical

dark rings. Antennæ black; head with the centre black; pronotum black with only the dorsal line pale, or pale with only the callosities and hind angles black; scutellum dark or pale; elytra varying from entirely pale with the apex of the cuneus only red, to pale, with the clavus, a broad apical band on the corium, and the apex of the cuneus, widely black; membrane dusky; legs testaceous, two rings on the posterior femora, the inner one widest, and one on each of the others dark brown; tibiæ with fine spines.

L. $4-4\frac{1}{2}$ mm.

Common on *Umbelliferæ* and generally distributed.

L. cervinus, *H. Schf.*—Somewhat like the preceding, but duller and more closely punctured, and with the markings paler; brownish testaceous, vertex between the eyes very narrow in the ♂, not nearly so wide as either eye; antennæ with the third and fourth joints black, extreme base of the third pale, together considerably shorter than the second, the apex of which is black; pronotum deeply punctured, hind angles, and sometimes a line along the base brown; scutellum often with two wide central stripes; elytra very finely and closely punctured, generally with a more or less distinct, wide, apical band on the corium, cuneus with the apex brown or red; legs pale, posterior femora with two narrow subapical brown rings, spines of the tibiæ exceedingly short.

L. 4 mm.

On *limes*, *ash*, etc.; generally distributed.

L. rubricatus, *Fall.*—Subelongate, entirely pale orange-red, clothed with very fine pale hairs. Antennæ long and thin, reaching almost to the cuneus, third and fourth joints dusky, together as long as the second; pronotum deeply punctured, elytra rather closely so, their sides subparallel or slightly rounded, membrane with a cloud within the apex of the cells, and another below the cells; tibiæ pale, with fine spines.

L. 5 mm.

On *Conifers*; not rare. Reigate, Southwold, Woking, Bromley; Hurst Green, Barnet, Shalford, *Butler*; Littlehampton, Chobham, Mickleham, Darenth, *Champion*; Glanvilles Wootton, *Dale*; Llandaff, South Wales, *Billups*; Ireland, *Haliday*; Nunton, Leicester, *Marshall*; Norfolk, *Edwards*.

L. atomarius, *Mey.*—Elongate oval, strongly punctured, somewhat dull, testaceous with a reddish tinge, clothed with a fine pale pubescence, sometimes more or less irrorated with black, or with a dark stripe on each elytron, membrane dark, scutellum often with a dark central line. Head black in the centre in the ♂, vertex between the eyes about as wide as each eye, in the ♀ nearly once and a half as wide with only a central spot; pronotum short, convex, very strongly and closely punctured; elytra very closely but not so strongly punctured as the pronotum; membrane irrorated with darker spots; all the femora with two subapical rings, tibiæ with strong black spines.

L. 4–5 mm.

Hitherto only recorded from Stratton Strawless, near Norwich, off silver firs, by *Mr. Edwards*.

ZYGIMUS, *Fieb.*

(*Hadrodema*, *Fieb.*)

This genus, of which we have only one species in Britain of the three recorded by Puton as Palæarctic, appears to differ from *Lygus* only by the very wide head and more prominent eyes, and by the slightly longer rostrum. Our species is of a testaceous or testaceous-brown colour, very deeply punctured, and occurs on *Conifers*.

Z. pinastri, *Fall.*—Short oval, shining, testaceous, more or less tinged with brown in the ♂. Head smooth and very shining, hardly punctured, vertex very wide, eyes

large and projecting considerably beyond the lateral margins of the pronotum; basal joint of antennæ short, second longer than the third and fourth together, these latter subequal; rostrum thick, reaching to beyond the posterior coxæ, central lobe of the face black; pronotum very largely and deeply punctured, darker in front, especially in the ♂, base rounded; scutellum largely punctured; elytra more finely punctured than the pronotum, sides subparallel in the ♂, slightly rounded in the ♀, apex of the cuneus darker in the ♂; membrane dusky; legs with the femora spotted at the apex, the spots often connected so as to form two apical rings, spines of the tibiæ very short and inconspicuous.

L. $4\frac{1}{2}$ mm.

Conifers; Weybridge, Chobham, Woking, Bromley; Hurst Green, Boxhill, Barnet, Ewhurst, Shalford, Mickleham, Lowestoft, Corton, Fritton, Somerleyton, *Butler*; Norfolk, *Edwards*; Morayshire, *Norman*; Oxshott, Plumstead, St. Fagan's, South Wales, *Billups*; Glanvilles Wootton, *Dale*; Esher, *Champion*.

PÆCILOSCYTUS, Fieb.

(*Systratiotus*, D. & S. *Charagochilus*, Fieb.)

May be known from all the other genera in which the pronotal collar is raised and callose by its vestiture of scale-like, deciduous, golden pubescence; the rostrum is short, only reaching to the intermediate coxæ, and the posterior femora are incrassated.

We have three British species of the ten recorded by Puton in his Catalogue.

- | | | | | | |
|-----|----|------------------------------------|---|---|---------------|
| (4) | 1. | Elytra not black and yellow. | . | . | GYLLENHALII. |
| (3) | 2. | Femora pale at the apex and ringed | . | . | GYLLENHALII. |
| (2) | 3. | Femora entirely black | . | . | NIGRITUS. |
| (1) | 4. | Elytra black and yellow | . | . | UNIFASCIATUS. |

P. Gyllenhalii, Fall.—Brown-black, clothed with small irregular patches of golden squamose pubescence, very con-

vex, short oval, eyes large, antennæ testaceous, dusky towards the apex; pronotum short, very much raised and very convex posteriorly, deeply punctured, base rounded, its extreme margin narrowly pale; scutellum convex, transversely rugose; elytra punctured, in fresh examples closely irrorated with small patches of silvery-gold pubescence, cuneus red-brown, paler at the base and apex, deflected, together with the entire apical margin of the corium, almost at right angles to the rest of the elytra; membrane dark brown, nervures pale. Mr. Douglas (Ent. Mo. Mag. xvii. 164) records a ♂ in which the entire elytra are horizontal, and the membrane enlarged both in length and breadth; femora brown, pale at the apex, the pale colour traversed by a brown ring; tibiæ ochreous, sometimes brown at the base; orifice of the odoriferous sac large, surrounded by a wide, foliaceous pale margin.

L. $3\frac{1}{2}$ mm.

On *Urtica* and *Galium*; generally common.

P. nigrinus, Fall.—Black, slightly convex, clothed with golden deciduous pubescence. Antennæ rarely with the centres of the second and third joints paler, third and fourth joints together longer than the second; pronotum rugosely punctured, considerably raised posteriorly, but much less so than in *Gyllenhalii*; scutellum transversely rugose and punctured; elytra closely punctured, apex of the corium just above the cuneus and the cuneus itself pale ochreous, the latter with a black spot just above the apex; membrane brown, cells and their nervures yellow, with a brown central patch; femora black, tibiæ black, or pale with the base, apex, and a ring above the middle, black, tarsi black, sometimes pale at the base; beneath black, orifice of the odoriferous sac small, transverse, with a pale foliaceous margin posteriorly.

L. $4\frac{1}{2}$ –5 mm.

On *Galium*, *Stachys sylvatica*, etc. Local, but apparently not rare where it occurs. Mickleham, on *Stachys*,

Douglas and Scott ; *Deal, Billups* ; *Bickleigh, Devon, Bignell* ; *Caterham, Champion* ; *Dover, C. G. Hall* ; *Stevenage, Wymondley, Shalford, Butler.*

P. unifasciatus, *Fab.*—Oblong oval, black, clothed with golden deciduous pubescence; antennæ, at least at the base, a spot near each eye, the extreme base of the pronotum, the apex of the scutellum, the base of the corium its inner and outer margins and its apical margin above the cuneus, yellow; cuneus blood-red, black externally, and yellow at the base and apex; membrane dusky, nervures pale; legs pale ochreous, femora red or brown except towards the base, extreme apex of tibiæ and tarsi black. Vertex between the eyes in the ♂ narrower than each eye, in the ♀ considerably broader; pronotum shallowly and rugosely punctured; elytra more finely so, its sides subparallel in the ♂, rounded in the ♀; beneath with the margins of the acetabula and the sides of the pronotum yellow; orifice of the odoriferous sac small and elongate; abdomen sometimes with yellow spots.

L. 6–6½ mm.

Not uncommon on *Galium*, and generally distributed.

CAMPTOBROCHIS, *Fieb.*

We have only one representative of this little genus of the five recorded in Puton's Catalogue. It may be recognized easily from its allies by its shining, glabrous surface, which is very strongly punctured, and by the ecarinate vertex of the head, as well as by the very short third and fourth joints of the antennæ, these together are much shorter than the second, which in the ♂ is much thicker than in the ♀; tibiæ without spines.

C. lutescens, *Schill.* (*punctatus*, *D. & S.*).—Subconvex, oval, testaceous, shining, glabrous, very strongly punctured, pronotum entirely, or only its callosities, scutellum sometimes except at the apex, the corium more or less,

a band across the cuneus near its apex, one or two bands on the posterior femora, and two narrow bands on all the tibiæ, brown; the darker varieties are generally males. Head short, transverse, antennæ with the apex of the second, third, and fourth joints brown, third and fourth subequal, and about as long as the first; pronotum very clearly and remotely punctured, sides nearly straight, base rounded; scutellum impunctate, very shining; elytra punctured, more largely and deeply so on the clavus, its sides slightly rounded, membrane slightly smoky, nervures dark; tibiæ not spinose, beneath dark brown; orifice of odoriferous sac large, and surrounded by pale foliaceous plates much as in *Parciloecytus Gyllenhalii*.

L. 4 mm.

By sweeping and beating *Limes* and other trees and plants; *Douglas* and *Scott* record it from *Pteris*; I have beaten it from *Maples*; *Reuter* mentions it as occurring on *Tanacetum* and *Achillea*; *Reigate*, *Woking*, *Chobham*, *Bromley*; *Limes*, *Norfolk*, *Edwards*; *Hale End*, *Epping Forest*, *Butler*; *Nunton* and *Surbiton*, *Marshall*; very common on *Limes*, *Bath*, *Blathwayt*; *London district*, *Champion*; *Barry Island* and *Taff's Well*, *South Wales*; *Byfleet*, *Billups*.

LIOCORIS, *Fieb.*

Oval, convex, glabrous, finely and remotely punctured; antennæ longer than the body, head ecarinate on the vertex, rostrum reaching to about the posterior coxæ; pronotum very convex, anterior margin callosely raised; scutellum flat, sides of elytra rounded; tibiæ with black spines, second tarsal joint longer than the first. There is only one European species.

L. tripustulatus, *Fab.*—Head shining, impunctate, brown or entirely pale, antennæ testaceous, second joint more or less black at the base and apex, third and fourth

together longer than the second; pronotum convex, trapeziform, shining, largely and remotely punctured, black, with the dorsal line, widening in front, pale yellow, varying to entirely testaceous with the hind angles black; scutellum yellow, its base sometimes with a black spot; elytra finely punctured, black, with the extreme base, a central lateral band and a band across the cuneus pale yellow, varying to ochreous, with an apical band across the corium and the apex of the cuneus brown, membrane dusky with two clear pale spots in a transverse line; femora pale, with two dark subapical rings; tibiae with the base, apex and a narrow ring below the base, brown or black; beneath black or pale, orifice of sac much as in *Camptobrochis*.

L. 5 mm.

Very common, and generally distributed; occurs on nettles.

CAPSUS, Fab.

A genus of well-marked, mostly highly coloured species. Head without any carina or rounded margin posteriorly, eyes very prominent, their entire width projecting beyond the lateral margin of the pronotum, antennae with the second joint finely pilose, more or less thickened at the apex, especially in the ♀, third and fourth joints much thinner than the second, and together much shorter than it; pronotum very narrow in front and wide behind, anterior collar very thin and raised; elytra and pronotum very strongly punctured; posterior femora slender, spines of the tibiae very short, hardly noticeable; orifice of sac large, with foliaceous plates.

We have two British species of the eleven recorded as Palearctic by Puton.

C. lanarius, Linn.—Rather short oval, shining, glabrous, very strongly and rugosely punctured, ♂ and ♀ similar in outline. Head and pronotum black, varying to ferruginous yellow; antennae black, or with the centre

of the second joint paler, second joint in the ♂ gradually thickened from the base to the apex, in the ♀ rather suddenly incrassated apically, clothed in both sexes with fine hairs; pronotum with the anterior margin about a quarter as long as the base, sides nearly straight, base rounded; scutellum black or yellow; elytra widest behind the middle, side margins much reflexed in front, entirely black with only the base of the cuneus bright red, and the base of the corium dull red, varying to entirely ferruginous yellow, with the apex of the cuneus only black; membrane blackish, with a clear spot below the apex of the cuneus; femora black at the base, pale at the apex, tibiæ pale, often clouded with brown towards the base; beneath dark, sometimes more or less yellowish.

L. 7 mm.

All my dark examples are males. Common by sweeping nettles, etc., and generally distributed.

C. scutellaris, *Fab.*—Deep black, shining, strongly punctured; a line across the back of the head, and sometimes the scutellum, blood-red; male much longer, narrower, and more parallel-sided than the ♀; the second joint of the antennæ slightly thicker, but in neither sex so much thickened at the apex as in *laniarius*; pronotum more closely punctured than in the preceding; scutellum quite smooth, shining and impunctate; elytra closely punctured, membrane dusky, unspotted.

L. ♂ 8 mm. ♀ 6–7 mm.

Rare. I have taken both varieties on heather at Chobham. Oxshott, *Billups*; Knighton Heath and Walmer, *Dale*; Hildolveston, Norfolk, *Power*; Dartford Heath, *Douglas and Scott*; Reigate.

RHOPALOTOMUS, *Fieb.*

A well-marked genus, easily known from the others of this group by the strongly clavate second joint of the

antennæ, as well as by the narrower form, and closely punctured, finely pubescent elytra; the pronotal collar is very short, and only slightly raised, and the anterior margin nearly half as wide as the base; the sides are nearly straight and the base slightly rounded; legs with the posterior femora somewhat incrassated, tibiæ spinose, first and second joints of tarsi subequal. There are four Palearctic species, of which we have only one.

R. ater, *Linna.*—Entirely black, or with the head, pronotum and legs red; second joint of antennæ very narrow at the base, strongly clavate at the apex, fourth longer than the third, third pale at the base, third and fourth together about equalling the second; pronotum very strongly punctured, anterior callosities smooth and shining; scutellum transversely wrinkled; elytra very finely and closely punctured, clothed with fine grey hairs, sides slightly rounded in the ♂, considerably so in the ♀, membrane dark; femora in the red-legged varieties with one or two apical rings, sometimes dark at the base, tibiæ black or red with the apex dark, tarsi, apical joint black; beneath black.

L. 6 mm.

Common by sweeping, and generally distributed.

BOTHYNOTUS, *Fieb.*

Male subelongate, parallel-sided macropterous; female short oval, generally brachypterous; surface very rugosely punctured and pilose. Head with the eyes not touching the pronotum, antennæ with the third and fourth joints together longer than the second, second very pilose in the ♂; pronotum with a raised collar, sides straight, base rounded; elytra, in the developed ♀ with the cuneus and membrane much deflected, in the ♂ nearly horizontal; posterior femora slender, tibiæ not spinose.

There is only one European species.

B. pilosus, *Boh.* (*Minki, Fieb., D. & S.*).—Pitchy black or brown, legs in the ♂ paler, ♀ with the head and legs red. Head smooth, shining, vertex very wide, and eyes small and prominent, basal joint of the antennæ in the ♀, and sometimes the second, except at its apex, red; pronotum very rugose and hairy; scutellum deeply impressed at the base, the sides and apex raised; elytra rugosely punctured and hairy, its side margins reflexed, membrane dusky; in the brachypterous form the elytra are about twice as long as the scutellum; legs pale brownish red in the ♂, shining and red in the ♀; in the developed ♀ before me the tibiæ are distinctly longer than in the undeveloped one; tarsi black.

L. ♂ 6 mm.; dev. ♀ 5 mm., undeveloped ♀ 4 mm.

Very rare. On the hills between Loch Long and Loch Lomond, four specimens, *Sharp*; Cuckmere District, Hastings, developed ♀, *Collett*; in a sandpit, Guestling, near Hastings, two undeveloped specimens, *Rev. E. N. Bloomfield*; Booton Common, Norfolk, by sweeping, *Edwards*; Reuter has taken it off *Spruce Fir* in Finland, in August.

PILOPHORUS, *Hahn.*

(*Camaronotus, D. & S.*)

This very distinct genus might be known from any other of our British genera by the brown colour and transverse silvery bands of its elytra; but besides these characters the flattened head posteriorly, which overlaps the front margin of the pronotum, the prominent eyes which project for nearly their entire width beyond the sides of the pronotum, and the slightly curved and flattened posterior tibiæ distinguish it at once from its allies. We have three closely allied British species of the seven recorded as Palæarctic.

- (2) 1. Corium with its entire apical width shining CINNAMOPTERUS.
 (1) 2. Corium shining only outside the median nervure
 (4) 3. Silvery band at the apex of the clavus nearer the base of the elytra than that of the corium CLAVATUS.
 (3) 4. Silvery bands of the clavus and corium in one line PERPLEXUS.

P. cinnamopterus, *Kbm.*—Head brown, first joint of the antennæ and the second at the base, paler brown, apex of the second black, third at the base, and the fourth, except at the extreme apex, pale whitish; pronotum black, trapeziform, convex, sides straight; scutellum black, with a bright silvery line across its apex; elytra widest behind the middle, dull cinnamon brown, a short narrow band in front, arrested at the claval suture, and a complete band continued across the clavus, posteriorly, of bright silvery pubescence; elytra behind the second silvery line darker and shining; cuneus and membrane much deflected, the latter obscure brownish grey; legs cinnamon brown; beneath with a band of silvery pubescence on the meso- and metasternum, and one on the abdomen towards the base.

L. 5 mm.

On firs, rare. Norfolk, *J. Edwards*; Plumstead, *Douglas and Scott*; Shiere, *Dr. Capron*; Weybridge and Taff's Well, South Wales, *Billups*.

P. clavatus, *Linn.*—Like the preceding in form and style of coloration, but longer, and narrower, the pronotum especially being longer in proportion to its width, with the sides slightly sinuate; the entire surface of the insect also is more pubescent, being clothed with fine scattered golden pubescence, and the general colour of a darker, less cinnamon-coloured brown; the head and pronotum have a bronzy tint, scutellum with a less distinct silvery band at the apex, posterior silvery band of the corium not meeting that of the clavus, but placed distinctly below it, inner half of the corium at the apex dull, legs darker than in *cinnamopterus*, and the posterior tibiæ narrower.

L. $5-5\frac{1}{4}$ mm.

On sallows; Woking; Norfolk, *Edwards*; Barnet, Shalford, *Butler*; Oxshott, *Billups*; Lee, *Douglas and Scott*; Tilgate, *Champion*.

P. perplexus, *D. & S.*—Easily separated from *clavatus* by the continuous band across the apex of the clavus and corium, otherwise exceedingly like it; it is, however, rather smaller, and less pubescent, destitute of the fine golden hairs of *clavatus*, the colour rather brighter, the head and pronotum scarcely bronzy, and the second joint of the antennæ slightly less clavate; it is also more variable in colour.

L. $4\frac{1}{2}-5$ mm.

On various trees, Chobham, Bromley; Lewisham; Deal, *C. G. Hall*; often in company with ants.

SYSTELLONOTUS, *Fieb.*

♂ elongate, macropterous, ♀ brachypterous with the abdomen nearly round, twice as wide as the head; very much like an ant in shape. Head larger, and more globose in the ♀ than in the ♂, eyes not touching the pronotum in either sex, antennæ of nearly equal thickness throughout, rostrum reaching to the posterior coxæ, basal joint very thick; pronotum trapeziform in the ♂, more or less campanulate in the ♀; elytra with shining white markings, very short in the ♀, not reaching to the dilatation of the abdomen; legs slender.

We have only one species, often found in company with ants, which the ♀ very closely resembles in general form. There are six Palearctic species.

S. trigtatus, *Linn.*—Chocolate brown, elytra paler. Head and pronotum shining, clothed with erect hairs, third joint of the antennæ almost as long as the second, fourth shorter, basal joint and base of third joint paler; scutellum convex; elytra dull, with fine erect hairs,

in the ♂ darker at the extreme base, with a transverse shining white band traversing the corium just above the posterior coxæ, bordered with dark brown, and a semi-lunate spot on the clavus at its side ; there is another similar band just above the cuneus ; cuneus dark brown like the base of the elytra, membrane dusky ; in the ♀ each elytron has a triangular white spot, and the globose abdomen is clothed with scattered upright hairs, legs brown, femora and tibiæ with erect hairs.

L. 4 mm.

Littlehampton, Woking, Chobham ; Weybridge, *Douglas*.
Dover, *C. G. Hall* ; Mousehold Heath, Norfolk, *Edwards* ;
Camber Sandhills, *Butler* ; Pluckley, Kent, *Billups* ;
Langport, *Dale*.

ALLODAPUS, *Fieb.*

(*Eroticoris*, *D. & S.*)

Subelongate in the developed form, short and widened posteriorly in the undeveloped, eyes large, very prominent, vertex with a longitudinal impression, antennæ of nearly equal thickness throughout ; pronotum with a narrow, straight collar, sides sinuate, base emarginate ; elytra considerably longer than the abdomen in the macropterous form, truncate at the apex, and about two-thirds the length of the abdomen in the brachypterous ; legs slender, with the femora slightly thickened.

There is only one species in the genus.

A. rufescens, *H. Schf.*.—Pale brownish red, clothed with long erect hairs, elytra with four white spots. Antennæ with the basal joint pale, red at the base, second darker red towards the apex, about equal in length to the third and fourth together, fourth about three-quarters as long as the third ; pronotum more or less transversely rugose, base about twice as wide as the anterior margin, sides sinuate, base largely emarginate, scutellum with a

dark spot at each basal angle; elytra with a triangular spot at the base of the corium, and a quadrate spot above the cuneus, white; in the developed form there is also a small white spot at the apex of the clavus; cuneus and corium between the spots darker, membrane dusky, paler below the apex of the cuneus; legs bright red, apex of the femora darker.

L. 5 mm. (macr.), $3\frac{1}{2}$ mm. (brach.).

Rare, on *Erica*, Reigate Heath, Woking; Lowestoft, Herringfleet, Ewhurst, Surrey, *Butler*; Scilly Isles, *J. E. Mason*; Knighton Heath, Thornmoor, York, *Dalc.* Dr. Reuter says it generally occurs in the evening, and this has certainly also been my experience.

HALTICUS, *Hahn.*

Very short oval, head flattened posteriorly and overlapping the front margin of the pronotum, eyes very prominent, contiguous to the pronotum, antennæ very long and slender, much longer than the entire insect, rostrum short, stout, reaching to the intermediate coxæ; pronotum short, subtrapeziform; elytra convex, cuneus and membrane much deflected; posterior femora very much thickened, tibiæ slender; finely spinose. There are eight Palæarctic species, of which two have occurred in this country.

- (2) 1. Head and pronotum yellow LUTEICOLLIS.
 (1) 2. Head and pronotum black APTERUS.

H. luteicollis, *Panz.*—Black, shining; head, pronotum except at the extreme base, antennæ and legs except the base of the posterior femora, yellow. Face elongate, forehead with three round impressions in a transverse line between the eyes, antennæ with the second joint black at the extreme apex, once and a half as long as the third, fourth rather longer than the third; pronotum short, anterior margin about two-thirds as long as the base; elytra shining, black, much wider than the pronotum, sides much rounded,

clothed in fresh examples with a golden scale-like pubescence which rubs off almost immediately, membrane black; tarsi black at the apex.

L. 3 mm.

On *Galium*, Hastings, Bromley; Guestling, Shalford, Ewhurst, *Butler*; Tilgate, *Champion*; Bembridge, Isle of Wight, *Dale*; Llantrissant and Cowbridge, South Wales, *Billups*.

H. apterus, *Linn.*—Black, very shining; antennæ, apex of femora, tibiæ and tarsi, pale, terminal joint of tarsi black. Less widened posteriorly than the preceding; pronotum more quadrate, its anterior margin being very little shorter than the base; elytra very convex, largely and shallowly punctured, often abbreviated, without golden pubescence, but with very short semi-adpressed black hairs, cuneus and membrane very much deflected; legs with the tibiæ very finely spinose.

L. 3 mm. (macr.), 2½ mm. (brach.)

Reigate, Charlwood, Herne Bay; Stevenage, Hurst Green, Ewhurst, Shalford, *Butler*; Chattenden, Tilgate, *Champion*; Pluckley, Kent, Taff's Well, South Wales, *Billups*; Glanvilles Wootton, *Dale*.

STRONGYLOCORIS, *Cost.*

(*Stiphrosoma*, *Fieb.*)

A genus of short oval, convex species, with very wide heads, of which we have only two of the eight recorded as Palæarctic, in Britain; the short antennæ, which are hardly longer than the head, pronotum and scutellum together, and the flattened head posteriorly, which fits closely on to the anterior margin of the pronotum, and the short legs, will serve to distinguish it from all the allied genera.

- | | | | | |
|-----|------------------------------------|---|---|----------------|
| (2) | 1. Black, head and legs testaceous | . | . | LEUCOCEPHALUS. |
| (1) | 2. Ochreous | . | . | LURIDUS. |

S. leucocephalus, *Linn.*.—Very short oval, black, shining, clothed with very short black hairs; head generally testaceous, but varying to piceous, first joint of antennæ, and legs except the tarsi, testaceous. Head very shining and smooth, viewed from above exceedingly short and broad, second joint of the antennæ about equal to the third and fourth together; pronotum largely and rugosely punctured, about as wide as the head in front, very little widened posteriorly, convex, sides rounded, base nearly straight, elytra and scutellum more finely and closely punctured, cuneus and membrane deflected, the former constricted at the base outwardly; tibiæ with very short black spines.

L. $2\frac{1}{2}$ mm.

Scarborough, on *Vicia cracca*, in July, *Wilkinson*; Mickleham, *Dr. Power*; Norfolk, *Edwards*; Chertsey, Oxshott, *Billups*; Glanvilles Wootton, Bournemouth, Lulworth, *Dale*; Pitlochry, *Norman*; Rannoch, *F. B. White*.

S. luridus, *Fall.*.—Testaceous or ochreous, somewhat shining, densely clothed with pale hairs. Antennæ blackish brown, apex of the basal joint and centre of the second paler; pronotum sometimes with a dark streak down each side anteriorly; in shape and proportion very like the preceding, but duller, more pubescent, and less largely and more closely punctured.

L. $3\frac{1}{2}$ mm.

On *Jasione*; rare. Hayling Island; Weybridge, *Douglas and Scott*; Swanage, *Marshall*.

ORTHOCEPHALUS, *Fieb.*

(*Labops*, *pars*, *Reut.*, *Saund.*, &c.)

Male macropterous, female usually brachypterous, more rarely macropterous; surface clothed with golden deciduous pubescence; head with the vertex carinated posteriorly, eyes prominent, antennæ reaching to the

apex of the cuneus, third and fourth joints much thinner than the second, which is slightly thickened towards the apex; pronotum trapezoidal, very slightly convex; posterior femora thickened, tibiae elongate, with rather long spines, second joint of posterior tarsi much longer than the first. We have two species in Britain, of the thirteen described by Reuter as Palearctic.

- (2) 1. Black, tibiae, at least the first and second
 pairs reddish ochreous SALTATOR.
 (1) 2. Legs entirely black, male with the corium
 inwardly pale MUTABILIS.

L. saltator, *Hahn*.—Black, tibiae of the first and second pairs of legs and sometimes of the third paler, surface densely clothed with black erect hairs and golden scale-like deciduous pubescence; second joint of the antennae not quite so long as the third and fourth together, narrower at the base than the first, but about as thick as that joint at the apex; pronotum in the ♂ with the anterior margin about half as long as the base, in the ♀ about two-thirds as long; elytra very long and parallel-sided in the male, sides slightly curved in the developed ♀, membrane black; in the undeveloped ♀ each elytron is rounded posteriorly, reaching nearly to the sixth segment; tibiae with fine long spines.

L. $5\frac{1}{2}$ mm. (macr.), 5 mm. (brach.).

Not rare; on *Trifolium*, *Ononis*, etc.; generally distributed.

L. mutabilis, *Fall*.—Male known at once from the preceding by its shorter form, shorter pronotum, less widened behind, the base not being more than once and a half as long as the anterior margin, the ochreous inner half of the corium, and paler membrane clouded with brown. The macropterous form of the ♀ is unknown, and the brachypterous form is difficult to distinguish from that of *saltator*; it is, however, rather larger and more robust, the pronotum is

wider and more transverse, and its sides more parallel, and the legs are entirely black.

L. 5 mm.

Chobham, Woking, Hampton Wick, Lowestoft, Barnstaple, Nunton near Salisbury, on *Tanacetum*, *Marshall*; Bixley, Norfolk, *Edwards*; Hurst Green, *Butler*; Chertsey, Taff's Well, South Wales, *Billups*; Glanvilles Wootton, *Dale*; Weybridge, *Douglas and Scott*; Forres, Pitlochry, *Norman*.

MACROLOPHUS, *Fieb.*

Elongate, delicate in texture, head convex, face nearly vertical, eyes remote from the pronotum, small, situated about midway between the apex and base of the head, sides behind the eyes parallel, antennæ with the second and third joints subequal, rostrum reaching to the posterior coxæ; pronotum with rather a long parallel-sided collar, sides sinuate, base raised and largely emarginate; elytra parallel-sided, membrane fully developed; femora slender, tibiæ with exceedingly fine spine-like hairs, second joint of the tarsi twice as long as the third.

M. nubilus, *H. Sch.*—Green, clothed with fine semi-erect brown hairs, basal joint of the antennæ, a stripe on each side of the head behind the eye, black, extreme apex of the corium and the last joint of the tarsi brown, antennæ reaching to about the apex of the cuneus, pronotum with a strong transverse discal impression, membrane with a transverse cloud above the apex.

L. $3\frac{1}{2}$ –4 mm.

Rare; on *Stachys sylvatica*, Reigate, Tunbridge Wells; Battle, Highgate, Barnet, by sweeping, "no *Stachys sylvatica* near," *Butler*; St. Albans, Leicester, *Marshall*; Norfolk, *Edwards*; Cardiff, *Billups*; Lewisham, June, on *Stachys sylvatica*, *Douglas and Scott*; Pitlochry, Forres, *Norman*.

DICYPHUS, *Fieb.**(Idolocoris, D. S. S.)*

Easily distinguished as a genus by the elongate shape, pale colour, and almost transparent elytra, which are clothed with semi-erect black or brown hairs; the legs also are long and slender, and the femora spotted with black or brown. The female is often and the male sometimes dimorphous. Eyes situated at some distance from the pronotum, head narrowed behind them, antennæ very variable in length; pronotum with a rather long collar and a well-marked transverse discal constriction, base largely and deeply sinuate; elytra in the macropterous form elongate, parallel-sided; femora spotted, tibiæ with fine spines. There are thirteen species described by Reuter, of which we have seven. This is one of our most difficult genera, the species being very closely allied and similar in general facies.

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| (6) | 1. Antennæ long and slender, reaching beyond the apex of the clavus. | |
| (5) | 2. Transverse sulcature of pronotum nearly in the centre. | |
| (4) | 3. Darker, second antennal joint pale only in the centre. | ERRANS. |
| (3) | 4. Paler, second antennal joint only darker towards the apex. | EPILOBII. |
| (2) | 5. Transverse sulcature of pronotum behind the centre. | CONSTRUCTUS. |
| (1) | 6. Antennæ shorter, not reaching to the apex of the clavus. | |
| (10) | 7. Head pale, with two dark lines down the middle. | |
| (9) | 8. Posterior tibiæ with long spines and rather long pubescence. | STACHYDIS. |
| (8) | 9. Posterior tibiæ with short spines and very short pubescence. | PALLIDICORNIS. |
| (7) | 10. Head black with pale spots. | |
| (12) | 11. Pronotum transversely rugose. | GLOBULIFER. |
| (11) | 12. Pronotum not rugose. | ANNULATUS. |

D. epilobii, *Reut.*.—Greenish ochreous, head and pronotum pale, a spot on the apex of the corium, and sometimes the apex of the cuneus dark, membrane with the nervures dark towards the apex of the cells; basal joint of

the antennæ red, second often dark at the base and apex, third and fourth dark or pale, abdomen green; structurally distinct from *errans* by the much narrower base of the pronotum, which is hardly twice as long as the anterior margin. This gives it a distinctly longer and narrower look; the third and fourth joints of the antennæ are also shorter in proportion to the second.

L. 5 mm.

Common and probably generally distributed, on *Epilobium*; it looks quite green in the net.

D. constrictus, *Boh.*—♂ macropterous, ♀ dimorphous; may be distinguished from *epilobii* by its shorter form, the wider pronotum posteriorly, the transverse sulcature of which is placed behind the middle; also by the larger, more prominent eyes, the thinner and longer third and fourth joints of the antennæ, which together are distinctly longer than the second, and by the pale, not red, basal joint. From *errans* the paler colour, the more posteriorly constricted pronotum, and the almost entirely pale cuneus will distinguish it. The brachypterous form of the ♀ closely resembles *stachydis*, but the long antennæ and legs of this species at once separate it.

L. 4 mm.

Rare; on *Symphytum* and *Rubus idæus* according to Reuter; has occurred in this country at Perth on *Symphytum*, Reuter; at Well in Lincolnshire, *J. E. Mason*, and at Shiere, Surrey, *E. A. Butler*.

D. errans, *Wolff.*—One of our darker species, head, antennæ, and pronotum mostly black or brown, the latter sometimes paler. Head with a pale streak on each side, and sometimes one in the centre; antennæ about as long as the abdomen, third and fourth joints together about equal to the second, basal joint in the ♂ subequal to the apical joint, shorter than it in the ♀; base and apex of first joint, sometimes the centre of the second, and the base of the third, pale; pronotum very wide posteriorly, base more than

twice as wide as the anterior margin; discal impression, if anything, in front of the middle; scutellum dark, with the sides pale; elytra pale ochreous, clothed with thick black hairs, clavus often nearly black, two spots at the apex of the corium, and the apex of the cuneus red or black, and sometimes the nerves of the corium black also, membrane hyaline, nervures dark; femora pubescent, spotted with black, tibiae with fine spines; beneath varying from black to ochreous.

L. 5 mm.

Generally distributed on *Stachys*, etc.

As mentioned by Dr. Reuter (Hem. Gymn. Eur. p. 417), I have a few specimens from Penzance differing in the longer antennae, and also in having the pronotum narrower at the base; but I think I shall do well to follow his example and wait for more specimens before describing this form as new. At Ilfracombe in September, 1890, I took two brachypterous females of this species, amongst many of the ordinary form. I do not think this form has been recorded before.

D. stachydis, *Reut.*—Distinguished from any of the preceding by the shorter form and by the shorter antennae and legs, and from *errans* and *constrictus* by the narrower base of the pronotum, which is scarcely twice as wide as the anterior margin; the antennae have the basal joint red at the apex, the second dark at the base and apex, the third and fourth dusky, the former pale at the base, together considerably longer than the second, fourth about two-thirds as long as the third; sides of the head behind the eyes black, vertex with two black lines, apex of the cuneus and nervures of membrane cells red; posterior tibiae only about $2\frac{1}{4}$ mm. in length, in *constrictus* they are nearly 3; both ♂ and ♀ occur brachypterous.

L. $4\frac{1}{2}$ mm. (macr.); $3\frac{1}{2}$ mm. (brach.)

On *Stachys sylvatica*; Reigate, Woking; Barnet, Shalford, Ewhurst, Leith Hill, *Butler*; Dover, *C. G. Hall*;

Colwyn Bay, *A. Beaumont*; Norfolk, *Edwards*; Cardiff, Walmer, Oxshott, Ely, *Billups*; Lincolnshire, *J. E. Mason*.

D. pallidicornis, *Fieb.*—Like *stachydis* in shape, but rather more parallel-sided and broader, and distinguishable from that species as well as from any of the preceding by the comparatively glabrous tibiæ, the fine pubescence of which is only to be seen through a strong lens; the pronotum also is shorter and broader, the base very wide; the elytra short and wide, parallel-sided; the cuneus broadly brown at the apex; cell-nerves of membrane brown.

L. 4 mm.

On *Digitalis*; Tunbridge Wells, Wimbledon, Esher, Reigate, *Champion*; St. Albans, Abergavenny, *Marshall*; Hurst Green, Ewhurst, Barnet, Shalford, *Butler*; Darent Wood, Taff's Well, South Wales, "very common on Fox-gloves," *Billups*; Forres, *Norman*; Kirkcudbrightshire, Perthshire, Aberdeenshire, Ross-shire, Inverness-shire, *F. B. White*.

D. globulifer, *Fall.*—Elongate oval, clothed with very short black hairs; head black, with a pale spot near each eye; antennæ black, short; pronotum black, varying to ochreous, with the callosities black, collar short, pale, callosities strongly developed, sides nearly straight, surface transversely rugose; scutellum black, with the sides white; elytra short, ochreous or brownish, punctured, sides slightly rounded, apex of cuneus brown, membrane smoky; all the nerves brown; legs short, femora with large black spots, tibiæ with fine brown spines.

L. $3\frac{3}{4}$ mm.

On various plants, *Pteris*, *Dianthus*, *Lychnis*, *Silene*, *Ononis*, fide *Reuter*; Woking, Lowestoft, Southwold, Hastings and Walmer, *Billups*; Glanvilles Wootton, *Dale*; Battle, Shalford, *Butler*; Norfolk, *Edwards*; Bishops Teignton, Leicester, *Marshall*; Devon, *Parfitt*; Knowle, Clacton, *Blatch*; Forres, *Norman*; Mickleham, Shirley, Caterham, *Champion*.

D. annulatus, *Wolff*.—The smallest species of the genus. Head black, with three white spots; antennæ short and thick, the base and apex of the first joint, the centre of the second, the base of the third, white; pronotum and elytra ochreous, clothed with coarse black hairs, callosities large, more or less spotted with white, dorsal line white, sides rounded in front, then constricted and straight posteriorly; scutellum black, its dorsal line and a spot on each side white; elytra unicolorous, a spot at the apex of the corium sometimes darker; membrane dusky, with a small brown spot below the apex of the cuneus; femora with large spots, tibiæ also spotted.

L. 3 mm.

On *Ononis*, common where it occurs.

Reigate, Herne Bay; Norfolk, *Edwards*; Wymondley, Deal, *Butler*; Sandwich, Bishops Teignton, *Marshall*; Barry Island, South Wales, *Billups*; Glanvilles Wootton, *Dale*; Caterham, *Champion*.

CAMPYLONEURA, *Fieb.*

Allied to *Dicyphus*, but distinguishable at once by the larger eyes, which touch the pronotum, and the brighter coloration, as well as by the very fine pale pubescence of its upper surface, and its unspotted femora. ♂ and ♀ macropterous. There is only one European species.

C. virgula, *H. Schf.*—Elongate, shining. Head black, with two pale spots at the base; antennæ, first joint orange yellow, slightly longer than the width of the vertex between the eyes, second black, pale at the extreme apex, third and fourth pale, subequal in length, together slightly longer than the second, basal half of the third reddish brown; pronotum orange red, collar and base widely white, sides nearly straight; scutellum orange at the base, paler at the apex, basal angles brownish; elytra

pale ochreous, clavus tinged with brown, cuneus yellow, its apex blood-red, membrane slightly dusky, nervures brown; legs pale, apices of tarsi black.

L. 4 mm.

This very pretty and elegantly-shaped little species is common and generally distributed, occurring on various trees. I have generally found it most commonly on oaks.

CYLLOCORIS, *Hahn.*

Our British representatives of this genus are two very dissimilar species, and I feel it rather hard to believe that they should be thus united. One is a rather flat, black, hairy insect, with four elytral spots, which used to be placed under *Globiceps*, from which genus, however, it is clearly distinct; the other a somewhat cylindrical, glabrous, highly-coloured insect. The genus as at present constituted differs from *Globiceps*, its nearest ally, by the similarity of the two sexes, the longer first joint of the antennæ, which is very slightly curved at the base, the shorter rostrum, only reaching to the mesosternum, and the more remote posterior coxæ; there are five species in Reuter's monograph.

- (2) 1. Reddish brown, head and parts of the pronotum black . . . HISTRIONICUS.
(1) 2. Black, with four yellow elytral spots . . . FLAVONOTATUS.

C. histrionicus, *Lin.*—Elongate, glabrous, shining. Head black, subglobose, vertex not carinated, basal joint of the antennæ yellow, longer than the head, second black or brownish, once and a quarter as long as the third and fourth together, third twice and a half as long as the fourth, fourth sometimes red; eyes prominent, not quite touching the pronotum; pronotum black, collar and base more or less widely pale yellow, sides sinuate, base much raised, but only slightly sinuate; scutellum black, apex yellow; elytra brownish, or orange yellow, corium bordering the clavus

grey, cuneus bright yellow at the base, dusky at the apex ; membrane brown, nerve of outer cell yellow at the apex a white spot just below the apex of the cuneus ; legs orange-yellow.

L. 7 mm.

This pretty and very variable species is common on oaks, and generally distributed.

C. flavonotatus, *Boh.* (*flavo-quadrinotatus*, *De Geer*, *Reuter*).—Black, clothed with erect hairs, with four yellow spots on the elytra, basal joint of the antennæ and legs testaceous. Head with a strong curved pale carina on the vertex posteriorly ; antennæ with the first joint as long as the head, fourth about a quarter as long as the third ; pronotum much widened posteriorly, sides rounded in front, then slightly sinuate to the posterior angles, surface transversely rugose ; elytra brown-black, base of the corium nearly to the apex of the clavus, the entire lateral margin and the cuneus except at its apex yellow ; membrane brown, a clear spot below the apex of the cuneus ; legs testaceous, tarsi brown ; beneath black.

L. 7 mm.

I have kept to the name *flavonotatus*, *Boh.*, as really *flavo-quadrinotatus*, *De Geer*, is too long to talk about.

On oaks, Chobham, Reigate ; Hastings, Highgate, *Butler* ; Church Stretton, *Blutch* ; Norfolk, "common on oaks," *Edwards* ; Darentb, *Champion* ; Glanvilles Wootton, *Dale* ; Ashtead Wood, Loughton, March, Cambridge, Llantrisant, *Billups* ; Horrabridge, Bickleigh Vale, Cann Wood, Devon, *Bignell* ; Ireland, *Haliday*.

ÆTORHINUS, *Fieb.*

Not likely to be confounded with any other British genus except *Orthotylus*, which it resembles in its uniform green colour, but from which it may be known by the sinuate sides of the pronotum, its anterior collar and the

discal transverse impression; the pronotum is also more convex, and more raised posteriorly. Eyes large, prominent, not quite touching the pronotum, vertex carinated posteriorly; elytra long, parallel-sided, both sexes macropterous; femora very long and slender, tibiæ with fine spines. There is only one species.

Æ. angulatus, *Fall.*—Green; base and apex of first and second antennal joints and a line along the first beneath, hind angles of pronotum, and extreme base of each tibia, and often a row of spots on each side of the abdomen beneath, black. Antennæ with the basal joint as long as the pronotum, and slightly longer than the apical, second and third subequal, second slightly curved; pronotum somewhat campanulate, callosities well developed, transverse sulcature deep, posterior angles slightly raised; elytra elongate, parallel-sided; membrane with the cell-nerves green; tibiæ slightly darkened towards the apex, apex of tarsi black.

L. 5 mm.

Common and generally distributed, occurs by beating various trees, especially *Salix*, *Alnus*, and *Betula*.

GLOBICEPS, *Latr.*

A well-marked genus, in which nearly all the described species have a tendency to four-spotted elytra. The ♂ and ♀ are dissimilar, the ♀ being generally brachypterous, and having the second antennal joint clavate; the head in the male is flattened between the eyes, in the ♀ it is raised, and the head subglobose; pronotum with the sides sinuate, callosities very large and prominent, base slightly sinuate; spines of the tibiæ scarcely observable. The synonymy of the four-spotted species has been constantly changing, but Dr. Reuter has examined the type specimen of *flavomaculatus*, *Fab.*, and says that it is what we call *selectus*, *Fieb.*; so although I am obliged again to alter our nomencla-

ture, I hope the alteration will be final. There are nine recognized European species, of which we have three.

- (4) 1. Elytra with four yellow spots.
- (3) 2. Male, elytra nearly four times as long as its basal width, head highly polished and shining; female, head viewed from in front not very transverse, vertex much raised between the eyes FLAVOMACULATUS.
- (2) 3. Male, elytra about three times as long as its basal width, head not very shining; female, head viewed from in front very transverse; vertex only slightly raised CRUCIATUS.
- (1) 4. Elytra pale whitish, with a greyish brown central band, vertex of male ecarinate DISPAR.

G. flavomaculatus, *Fab. (selectus, D. ♂ S.)*.—Black, clothed with occasional silvery deciduous scale-like hairs, basal joint of the antennæ and legs reddish, elytra with the base of the corium, except the extreme angles, and its lateral margin almost to the cuneus, as well as the base of this latter, ochreous white. Head very shining, strongly carinated on the vertex posteriorly in the male, carina complete or sometimes only visible in the centre, in the ♀ very globose; pronotum much widened posteriorly in ♂, callosities strongly marked, collar very short, ♀ (brach.) callosities very large, swollen and shining, projecting so as to cause the sides to be much rounded in front and sinuate behind them; elytra in the ♂ very elongate, in the brachypterous ♀ shorter than the abdomen. I do not know the macropterous form; membrane and nervures dark, tibiæ with scarcely noticeable spines.

L. 6 mm. ♂; 5 mm. ♀ (brach.).

According to Reuter, the right-hand forceps of the ♂ armature is simple at the heel, and the left-hand is not angulated on its outer edge.

Chobham; Hurst Green (at roots), *Butler*; Norfolk (rare), *Edwards*; Nunton and Cornworthy, *Marshall*; Devon, *Parfitt*; Leatherhead, Walmer, Pluckley, Cowbridge, South Wales, *Billups*; Glanvilles Wootton, *Dale*; Armagh, *Johnson*; Eltham, Weybridge, Sanderstead on *Umbelliferae*, *Douglas and Scott*.

G. cruciatus, *Reut.* (*flavomaculatus*, *D. & S.*, etc.; *fulvipes*, *Saund. Syn.*)—Exceedingly like the preceding, but smaller; ♂ less elongate, head less shining, second joint of antennæ shorter, vertex flatter; pronotum wider in front, collar longer; elytra shorter, spots less produced along the lateral margins. ♀ easily distinguished by the less globose head, and smaller less shining pronotal callosities, and consequently less sinuate sides. I have one macropterous ♀, in which the elytra are about as long as the abdomen. Right-hand forceps of ♂ spinulose at the heel, left, strongly angulated on its outer edge.

L. 5 mm.

On Sallows, &c., not uncommon, Hampton Wick, Deal, Hastings, Chobham; Reigate, *Champion*; Hurst Green at roots, *Butler*; Lincoln, *Blatch*; Forres, *Reuter*; Dartford Brent, *Douglas and Scott*.

G. dispar, *Boh.*—Head, pronotum, and abdomen black, elytra white, nearly transparent, with a wide cloud across the apex of the corium, the apex of the cuneus in the ♂ brown; legs in both sexes and basal joint of the antennæ in the ♀ ochreous. Head not carinated posteriorly in the male, second joint of the antennæ very clavate in the ♀, third joint pale at the base; sides of pronotum sinuate; elytra in the brachypterous ♀ about twice as long as the scutellum, in the macropterous slightly longer than the abdomen; membrane dusky, cell-nerves brown, cells hyaline; tibiæ with hardly perceptible spines.

L. 4 mm. (macr.), $3\frac{1}{2}$ mm. (brach.).

Hatley, *Bold*; Corton and Fritton, Suffolk, *Butler*; Earham, Coxford, Hellesdon, Norfolk, *Edwards*; Colwyn Bay, *Beaumont*; Oxshott, Penarth, *Billups*; Ireland, *Haliday*.

G. ater, *D. & S.*—This species still remains a mystery, but from Messrs. Douglas and Scott's description its leading characters should be:—Black, antennæ, third joint with its basal half yellow; corium pitchy black at the base, within the anterior margin a short whitish streak, claval suture narrowly whitish, posterior margin black, cuneus black,

inner basal angle brownish white, membrane pale brown, legs brownish yellow.

L. $3\frac{1}{2}$ mm.

Leicester, *Marshall*; one specimen ♀.

MECOMMA, *Fieb.*

(*Chlamydatus* pars, *Saund. Syn.*; *Sphyracephalus* pars, *D. & S.*)

Distinguishable from *Globiceps* and any of the preceding by the absence of the discal transverse sulcature of the pronotum; its nearest ally is the following genus *Cyrtorrhinus*, from which the more vertical face and the dissimilarity of the sexes separate it.

M. ambulans, *Fall.*.—Black, shining, clothed with pale hairs, legs pale ochreous, ♂ with the elytra also ochreous. Antennæ in the ♂ with the second and third joints subequal, in the ♀ with the second joints subclavate, longer than the third, eyes prominent, vertex carinated posteriorly; pronotum trapezoidal, callosities not prominent; elytra elongate, parallel-sided in the ♂, ochreous, their margins, especially those of the cuneus, the clavus, and a spot at the outer apical angle of the corium darker, membrane with the nervures brownish. ♀ elytra widened posteriorly, black, membrane with the cell-nerves and cells dark, brach. ♀ with their apices rounded, not covering half the shining black abdomen, tibiæ with very fine spines.

L. $4\frac{1}{2}$ mm. ♂; 4 mm. ♀ macr.; 3 mm. ♀ brach.

By sweeping amongst rushes, etc., in damp places; generally distributed; macr. ♀ very rare.

CYRTORRHINUS, *Fieb.*

(*Chlamydatus* pars, *Saund. Syn.*; *Sphyracephalus* pars, *D. & S.*)

Differs from the preceding genus by the less vertical head and the similarity of the males and females, other-

wise I can see no structural characters to separate them. We have three out of the four known European species.

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| (2) 1. | Pronotum black | CARICIS. |
| (1) 2. | Pronotum chiefly pale. | |
| (4) 3. | Head black | PYGMÆUS. |
| (3) 4. | Head pale | FLAVEOLUS. |

C. caricis, *Fall.*.—♂ Elongate, ♀ elongate oval; head, pronotum, and scutellum black, elytra green outwardly, brown towards their suture, legs green or brownish-green. Vertex with a pale spot near each eye; antennæ black, longer than the body; pronotum trapeziform, callosities not prominent, sides slightly sinuate, base nearly straight; elytra parallel-sided ♂, sides slightly rounded ♀; clavus and corium on its inner margin dark in the ♂, less so in the ♀; membrane slightly dusky, cell-nerves green; legs brownish green in ♂, green in the ♀, tibiæ with scarcely noticeable spines.

L. 4 mm. ♂; 3½ mm. ♀.

Amongst rushes, &c.; Reigate, Chobham, Wimbledon, Surbiton; Newcastle, *Bold*; Shalford, Barnet, Tunbridge Wells, *Butler*; Norfolk, *Edwards*; Devon, *Parfitt*; Loughton, *Champion*; Byfleet, Oxshott, Holywell, Cardiff, *Billups*; Glanvilles Wootton, *Dale*; Forres, *Norman*; Colvend, Kirkcudbrightshire, *F. B. White*; Armagh, *Johnson*.

C. pygmæus, *Zett.* (*Tytthus insignis*, *D. & S.*).—Small, oblong-oval, macropterous in both sexes, pale testaceous, clothed with very fine brownish hairs. Head, antennæ except the apex of the first joint, and often the pronotum posteriorly-black; eyes large, prominent; antennæ with the third and fourth joints subequal, each about three-quarters as long as the second; pronotum transverse, trapeziform, sides nearly straight, base largely sinuate; elytra with the sides slightly rounded, membrane nearly hyaline, tibiæ with black spines.

L. 2½–3 mm.

At roots of rushes, &c. in marshes, Chobham, Wimbledon;

Barnet, Deal, Lowestoft, Fritton, *Butler*; Norfolk, *Edwards*; Esher and Freshwater Bay, Pembrokeshire, *Marshall*; Sandwich, *Billups*.

C. flaveolus, *Reut.*—Slightly larger and broader than *pygmaeus*, dimorphous in both sexes, macropterous forms rare; entirely flavous, with the exception of the eyes and antennæ, which are black, the latter having the extreme base and apex of the first and the base of the second and third joints pale; surface clothed with fine pale hairs; tibiæ with very fine brownish spines.

L. 3–4 mm.

Rare; Coxford, Hellesdon, Ranworth, Norfolk, *Edwards*; Fritton, Suffolk, *Butler*.

ORTHOTYLUS, *Fieb.*

(*Litosoma*, *D. & S.*)

A genus of closely allied species, mostly of a green colour, although some vary from the rule, and are brown or red; they are mostly elongate oval, the males being in most cases more parallel-sided than the females, although in one section of the genus they are almost alike. The eyes are large and nearly, or in some cases, quite touch the pronotum, the antennæ and rostrum vary in length and proportions, the pronotum is transverse and trapeziform, its sides nearly straight, the base straight, sinuate or slightly rounded, disc without a transverse sulcature, both sexes macropterous, tibiæ with fine spines, wing-cell without a hook-like nerve. We have seventeen British species of the thirty-five recorded by Reuter.

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| (4) | 1. | Elytra and pronotum more or less brown,
not entirely green or red. | |
| (3) | 2. | Entire insect olive brown. | FUSCESCENS. |
| (2) | 3. | Not entirely olive brown. | BILINEATUS. |
| (1) | 4. | Elytra and pronotum entirely green (or
yellow when faded), or red (<i>rubidus</i>). | |

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| (22) | 5. Pubescence of elytra unmixed with black hairs. | |
| (19) | 6. Cell-nerves of membrane green. | |
| (8) | 7. Basal joint of antennæ black beneath . | NASSATUS. |
| (7) | 8. Basal joint of antennæ not black beneath. | |
| (14) | 9. Anterior femora with a row of long bristly hairs along their under margin. | |
| (11) | 10. Larger and broader, base of pronotum straight . | MARGINALIS. |
| (10) | 11. Elongate, narrow, base of pronotum widely sinuate. | |
| (13) | 12. Basal joint of the antennæ shorter than the head, second joint without long exerted hairs . | DIAPHANUS. |
| (12) | 13. Basal joint of antennæ longer than the head, second joint with scattered exerted hairs . | VIRIDINERVIS. |
| (9) | 14. Anterior femora without long bristly hairs beneath. | |
| (16) | 15. Vertex carinated, male with the right side of the forceps stipitate and triangularly dilated, its apex truncate, left side with its wider basal portion very convex outwardly, denticulate on its upper margin, produced below into an elongate somewhat curved process . | OCHROTRICHUS. |
| (15) | 16. Vertex not carinated, right side of male forceps not truncate, left less convex, not denticulate along its upper margin, apical process straight. | |
| (18) | 17. Male, right side of forceps with two somewhat straight-sided processes of unequal length. Female with the apical joint of the antennæ considerably longer than the basal . | PRASINUS. |
| (17) | 18. Male, right side of forceps with two short processes of subequal length, much rounded on the under margin. Female, apical joint of the antennæ scarcely longer than the basal . | SCOTTI. |
| (6) | 19. Cell-nerves of membrane yellow. | |
| (21) | 20. Small, narrow, very pale yellowish green, elytra very delicate and transparent . | TENELLUS. |
| (20) | 21. Large, wide, elytra green, not very thin, and transparent . | FLAVINERVIS. |
| (5) | 22. Pubescence of elytra mixed with black hairs. | |
| (24) | 23. Cells of membrane green . | FLAVOSPARSUS. |
| (23) | 24. Cells not green. | |
| (26) | 25. Third and fourth joints of the antennæ together shorter than the second . | ADENOCARPI. |

- (25) 26. Third and fourth joints of the antennæ together longer than the second.
- (39) 27. Rostrum not reaching to the posterior coxæ, posterior femora scarcely thickened.
- (29) 28. Rostrum thicker, reaching slightly beyond the anterior coxæ, colour darker green, membrane dark CHLOROPTERUS.
- (28) 29. Rostrum thinner, reaching to the intermediate coxæ, colour paler green, membrane paler CONCOLOR.
- (27) 30. Rostrum reaching beyond the posterior coxæ, posterior femora more or less thickened.
- (32) 31. Oblong oval, vertex not carinated, cell nerves yellow ERICETORUM.
- (31) 32. Short oval, green or red, vertex strongly carinated, cell-nerves not yellow RUBIDUS.

O. fuscescens, *Kb.*—Oblong or oval, broad, olive brown, clothed with fine pale and brown hairs. Antennæ with the first joint shorter than the fourth, third about two-thirds the length of the second, which is about equal to the third and fourth together; pronotum transverse, callosities well defined; elytra subparallel-sided in the ♂, sides curved in the ♀, membrane dusky; tibiæ with fine spines.

L. 4-4½ mm.

On *firs*, July, Forres, *Norman*.

O. bilineatus, *Fall.*—Subelongate, greyish or greenish brown; clothed with short pale hairs. Head yellowish, dorsal line, widening anteriorly, brown; antennæ black, second joint subequal to the third and fourth together, fourth not half so long as the third; pronotum with the sides sinuate, posterior angles slightly raised, generally with a dark band across the callosities, and the hind angles brown; scutellum yellow, triangularly brown in the centre; elytra subparallel-sided; clavus brown, except on its outer margin, corium greenish, more or less clouded towards the apex; membrane slightly dusky; tibiæ with fine spines, tarsi black.

L. 5 mm.

On *aspens*, Wimbledon; Wymondley and Stevenage,

Butler; Muckton, Lincolnshire, *J. E. Mason*; Leicester, *Marshall*; Kirkcudbrightshire, Perthshire, Aberdeenshire, Ross-shire, and Inverness-shire up to 1500ft., *F. B. White*; Pitlochry and Forres, *Norman*; Braemar, *Champion*.

O. nassatus, *Fab.* (*striicornis*, *Kb.*)—Subelongate, pale green, somewhat transparent, clothed with fine pale hairs, membrane hyaline, strongly iridescent. Antennæ rather short, first joint about as long as the vertex between the eyes, black beneath, second joint about as long as the third and fourth together, fourth half as long as the third; pronotum flat, wide posteriorly, sides straight; elytra with the sides subparallel, cell-nerves bright green; tibiæ with fine spines, anterior femora beneath with long fine hairs.

L. 5 mm.

On *oaks* and other trees, Wandsworth, Chobham, Bromley; Eltham, *Douglas and Scott*; Barnet, Shalford, *Butler*; Norfolk, *Edwards*; Well Vale, Lincolnshire, *J. E. Mason*; Oxshott, Taff's Well, South Wales, *Billups*; Glanvilles Wootton, *Dale*; Forres, *Norman*; Rannoch, *Marshall*.

O. diaphanus, *Kb.*—Very pale green and transparent, smaller than the preceding. Antennæ short compared to the other species, third and fourth joints together longer than the second, often more or less dusky, third about four-fifths as long as the second, fourth not half so long as the third; vertex marginated; anterior femora beneath with a series of long erect hairs.

L. 4 mm.

On *Salix*, Bromley; Barnet, Hastings, Bexhill, *Butler*; Well, Lincolnshire, on *ash*, *J. E. Mason*; Lee, Eltham, *Douglas and Scott*.

O. viridinervis, *Kb.*—Darker and rather larger than either of the preceding, from which it may be known by the longer antennæ, whose basal joint is as long as the head, second shorter than the third and fourth together, third not two-thirds as long as the second, apical joint longer than the basal, second joint with long exserted hairs, vertex of

the head marginated ; anterior femora beneath with a row of long hairs ; rostrum reaching to the posterior coxæ.

L. 5-6 mm.

On *Elms*, &c., Woking ; Norfolk, *Edwards* ; Pitlochry, Forres, *Norman*.

O. prasinus, *Fall.*—Very like the preceding, but distinguishable on close examination by the immarginate or almost immarginate vertex, the glabrous front femora beneath, the shorter first joint of the antennæ, which is not so long as the head, the absence of the longer exserted hairs on the second joint, and the shorter rostrum, which reaches only to the intermediate coxæ ; ♂ forceps of left-hand side with its lower margin produced into a long straight process at right angles to its stem, right-hand side with two unequal processes, the outer or lower one longest.

L. 5 mm.

Elms, Norfolk, *Edwards* ; Well Vale, Lincolnshire, *J. E. Mason*.

O. Scotti, *Reut.* (*viridinervis*, *D. & S.* ; *prasinus*, *Saund. Synopsis*).—So like *prasinus* as to be scarcely distinguishable except by the genital armature of the ♂. This in *Scotti* differs very much in shape from that species, the right side of the forceps having its lower margin very much curved, its upper margin emarginate, with a blunt tooth at the side of the emargination nearer the base, left side somewhat like that of *prasinus*, but with a much shorter process. The only other character of importance is the slightly shorter apical joint of the antennæ, which is not longer than the basal joint ; this in the ♀ is the only character I know of to rely upon.

L. 5 mm.

On *Elms*, apparently generally distributed.

O. ochrotrichus, *D. & S.* (*propinquus*, *Reut.*)—Very closely allied to the two preceding, from which it may be known in both sexes by its distinctly and somewhat strongly carinated vertex, and in the male by the very differently shaped forceps, the right side of which is shaped

like an inverted triangle on a stalk, its upper margin shorter than the sides; the left side, at the base, is very convex outwardly, and its upper margin denticulate, its lower margin produced into a long, curved, somewhat twisted, pointed process. From *viridinervis* the glabrous femora beneath will distinguish it.

L. 5 mm.

Woking, Surbiton and Chobham on *Elms*; Ilfracombe; Folkestone on *Ononis*, *Douglas and Scott*. The yellow spots on the elytra described by Douglas and Scott are, I believe, due to some irregular development of the green pigment; there are no traces of them in the other specimens that I have seen.

O. tenellus, *Fall.* (*angustus*, *D. & S.*)—Narrow, smaller than either of the three preceding, very pale ochreous yellow, elytra nearly transparent, clothed with pale hairs, eyes large and prominent, black, vertex carinated between them; antennæ with the third and fourth joints together shorter than the second, fourth about a third as long as the third; legs with a greenish tinge, anterior femora hairy beneath; cell nerves of membrane yellow.

L. 5 mm.

Ash, Oak, Hazel, etc., not rare, and generally distributed.

O. flavinervis, *Kbm.*—Larger than any of the preceding, elongate oval, green, clothed with rather thick pale hairs. Head yellow, basal joint of antennæ black in the ♂, third and fourth together about as long as the second, third not twice so long as the fourth; pronotum trapeziform, the sides nearly straight, the base slightly rounded at its sides, sinuate in the middle; base of scutellum and lateral margins of the elytra yellow, membrane dark, its nerve cells yellow; legs yellowish, apices of tibiæ and tarsi dark; male with the right side of the genital forceps three-pronged.

L. $5\frac{1}{2}$ -6 mm.

On *Salix*; Woking, Esher, Hastings, Bromley; Shalford, *Butler*; Norfolk, *Edwards*; Cornworthy, *Marshall*;

Forest Hill, *Champion*; Glanvilles Wootton, *Dale*; Walkham Valley and Bickleigh Vale, Devon, *Bignell*.

O. marginalis, *Rent. (nassatus, Full et Auct.)*.—Very like *flavinervis*, but rather longer; basal joint of the antennæ pale in both sexes; membrane scarcely dusky, nervures green; male with the right side of the genital forceps not three-pronged, but the left side produced into two long prongs, which are very conspicuous.

L. 6-6½ mm.

On *Salix*, common.

O. adenocarpis, *Perr. (Douglasi, Saund.)*.—Of a rather bright pale yellowish green, clothed with pale and black hairs intermixed, pale hairs largely predominant, black hairs easily rubbed off. Antennæ testaceous, third and fourth joints together shorter than the second, third joint about half as long as the second, fourth two-thirds as long as the third, rostrum reaching to the intermediate coxæ; pronotum transverse, trapeziform, sides and base nearly straight; elytra subparallel-sided ♂, slightly rounded ♀, membrane slightly dusky, nervures pale yellowish white; tibiæ with dark spines.

L. 5 mm. ♂, 4 mm. ♀.

On *Broom*, Woking, Chobham; Plumstead, *Billups*; Weybridge, *Champion*; Shalford, *Butler*; Perth, *Reuter*; Forres, *Norman*.

O. chloropterus, *Klm. (concolor, Saund. Synops, D. ♂ S.; ♂ = virescens, D. ♂ S.)*.—Very like the preceding, but of a darker green and with the membrane much darker, its nervures almost concolorous. The third and fourth joints of the antennæ are much longer taken together than the second, the third being nearly as long as the second, and the fourth not quite a third as long as the third; the black hairs on the surface of the elytra are also much more abundant; rostrum short and thick, only reaching to just beyond the anterior coxæ.

L. 5 mm. ♂, 4½ mm. ♀.

Common, generally distributed where *Broom* occurs.

O. concolor, *Kb.*—Smaller, paler, and of a rather bluer green in colour than either of the preceding, though more like *adenocarp*i in this respect; third and fourth joints of the antennæ together slightly longer than the second, third about four-fifths as long as the second, fourth about a quarter as long as the third; rostrum slender, reaching to the intermediate coxæ; elytra with shining white hairs, which are easily rubbed off, and with longer fine black ones intermixed; membrane much paler than in *chloropterus*, its nervures yellowish.

L. 4–4½ mm.

On *Broom*, Woking; Forres and Perth, *Reuter*; Norfolk, *Edwards*; March, Cambs., *Billups*.

I have often had this and the two preceding species in my umbrella at once, and by the colour alone one could separate them. *Chloropterus* is the dark green one, *adenocarp*i the yellowish-green one, and *concolor* the whitish or bluish-green one; but immature examples are puzzling.

O. flavosparsus, *Sahlb.* (*prasinus*, *D.* & *S.*).—Bright green, clothed with black hairs, interspersed on the elytra with small paler spots and patches of bright silvery scale-like hairs, cells of the membrane green. Antennæ very long and slender, second and third joints subequal; pronotum very transverse, sides nearly straight; elytra parallel-sided in the ♂, its sides slightly rounded in the ♀; legs slightly paler.

L. 4 mm.

On *chenopodiaceous plants*; the spots after death are often quite lost; Lowestoft, Hastings, Littlehampton; Bexhill, Pegwell Bay, Corton, Suffolk, *Butler*; Devon, *Parfitt*; Hunstanton and Brancaster, *Edwards*; Harwich, Walton-on-Naze, Sheppey, *Champion*; Byfleet and Llantrissant, *Billups*; Southampton, Lee, *Douglas and Scott*.

O. rubidus, *Put.* (var. *Moncreaffi*, *D.* & *S.*).—Short, oval, dull red or (var. *Moncreaffi*) green, clothed with black hairs

and short silvery ones which are easily rubbed off. Head and pronotum wide and transverse, antennæ with the third and fourth joints together longer than the second, third about three-quarters as long as the second; rostrum reaching to the posterior coxæ. Elytra with its sides rounded, membrane slightly dusky; legs with the posterior femora thickened, tibiæ with fine spines.

L. $3-3\frac{1}{2}$ mm.

In salt marshes, on *Arenaria*, *Salsola*, etc., Hayling Island; Portsmouth, *Moncreaff*; Lymington, Salterns and Chesil Beach, *Dale*; Dawlish Warren, *Bignell*; Yarmouth and Wells, Norfolk, *Edwards*; Rye, Pegwell Bay, *Butler*.

O. ericetorum, *Fall.*—Bright green, shining, clothed with black hairs, sides of the corium, cuneus, and nervures of membrane yellow; antennæ long, third joint about three-quarters as long as the second, fourth about half as long as the third, rostrum reaching to beyond the posterior coxæ; pronotum short, callosities strongly marked; elytra parallel sided ♂, sides rounded, converging to the apex of the membrane which is narrow, giving the elytra rather an acuminate shape in the ♀, membrane dusky, cell nerves yellow; posterior femora strongly incrassated.

L. $3-3\frac{1}{2}$ mm.

Common on *Erica* and generally distributed.

HYPsITYLUS, *Fieb.*

Closely allied to *Orthotylus*, but distinguished by the peculiar form of the rostrum, the third joint of which is widened at its apex, and the fourth widened at its base, so as to give the organ a club-shaped appearance. There are only two European species, of which we have one.

H. bicolor, *D. & S.* (*Orthotylus chloropterus*, *Saund. Synopsis.*).—Dull greyish-green, clothed with black and silvery hairs intermixed, silvery hairs dense on the head; head, pronotum, clavus, and corium at its inner apical angles

brownish in the ♂, membrane dark. Vertex very wide, in the ♂ twice, and in the ♀ three times as wide as each eye, antennæ brownish, third and fourth joints together longer than the second; pronotum very wide in front, sides nearly straight; elytra long and parallel-sided in the ♂, short with the sides slightly rounded in the ♀; tibiæ with fine spines.

L. $4\frac{1}{2}$ ♂, $3\frac{1}{2}$ ♀.

On *Ulex*, common, and probably widely distributed. It has been recorded from Reigate, Woking, Chobham; Hastings, Battle, Hurst Green, Ewhurst, Shalford, *Butler*; Norfolk, *Edwards*; Bewdley, *Blatch*; Oxshott, *Billups*; Glanvilles Wootton, *Dale*.

MALACOCORIS, *Fieb.*

Elongate, exceedingly thin in texture, and transparent, elytra with green marbling, eyes prominent, not touching the pronotum, sides of the head swollen, and rounded behind them, third and fourth joints of the very slender antennæ together longer than the second, pronotum with the callosities strongly defined, sides straight, base deeply sinuate, cells of the membrane green apically, legs very slender. Unlike any other British genus, but allied to *Orthotylus*. There is only one species.

M. chlorizans, *Fall.*—Shining, elongate, very pale, transparent, whitish green, clothed with fine upright hairs, elytra with darker green spots, membrane hyaline, cells green round their apical nervure. Eyes small, prominent, remote from the pronotum, basal joint of the antennæ black beneath, second black at the extreme base; pronotum shaped as above; elytra elongate, parallel-sided; tibiæ with fine hair-like spines.

L. $4\frac{1}{2}$ –5 mm.

This most delicate and beautiful little species is far from

rare on *hazel*; it occurs also on *ash*, *alder*, *elm*, *lime*, *birch*, and *sallows*, fide *Reuter*; it is generally distributed.

LOXOPS, *Fieb.*

Oval, flat, broader than the allied genera, and in form more like a *Psallus*. Head with the eyes small and not prominent, projecting very little beyond the lateral margins of the pronotum, antennæ with the first joint rather densely hairy, second very long, once and three-quarters as long as the third and fourth together; rostrum reaching to the intermediate coxæ, pronotum trapezoidal, transverse, elytra parallel-sided, tibiæ with very long hair-like spines. There is only one species.

L. coccineus, *Mey.*—Ochreous, mottled with red or in some specimens mostly red. Head ochreous, a line down the centre red, antennæ reddish; pronotum ochreous, the sides red or brown, and a narrow dorsal line red, lateral margin straight, base slightly sinuate; scutellum ochreous, its sides red; elytra ochreous with red markings, or red with ochreous spots, or in some dark males almost entirely brownish red, the lateral margin always darkest, membrane slightly dusky, cell nerves red; beneath and legs ochreous, femora red at the apex.

L. $4\frac{1}{2}$ mm.

On *Ash*, Reigate, Hastings, Chobham; Barnet, Shalford, Sevenoaks, *Butler*; Norfolk, *Edwards*; St. Albans, *Marshall*; Exeter, *Parfitt*; Oxshott, and Taff's Well, South Wales, *Billups*; Walkham Valley, Bickleigh Vale, Shaughbridge, Devon, *Biggell*.

HETEROTOMA, *Latr.*

Subelongate, rather flat, eyes large, basal joint of the antennæ swollen, densely hairy, but not compressed, second compressed, densely hairy along the sides, and very wide, about one-fifth as wide as its length, and wider than the vertex between the eyes, and like the vertex wider in

the ♀ than in the ♂. Gradually narrowed at the base and apex, third and fourth very slender and short, subequal; pronotum subtrapezoidal; elytra with the membrane towards its outer edge dark and subrugose, and the wing also rugose in the same relative position. I am not aware of this character occurring in any other genus.

We have only one species in England; three occur on the Continent.

H. merioptera, Scop.—Shining, brown, clothed with fine brown hairs intermixed with short white pubescence, easily rubbed off, vertex in the ♂ slightly wider than either eye, in the ♀ once and a half as wide, for form of antennæ see generic characters; pronotum with the sides slightly sinuate; elytra parallel-sided in the ♂, sides slightly rounded ♀, membrane dusky, a white spot below the cuneus, followed by the dark rugose stripe mentioned above; legs green or yellowish, apex of tarsi black.

L. 5 mm.

Common on nettles, etc., and generally distributed.

HETEROCORDYLUS, Fieb.

Oblong-oval or oval, black, clothed with very short black-brown hairs, and with white scale-like pubescence. Vertex of the head carinated, antennæ with the second joint elongate, fusiform in the ♀ of *genistæ*, third and fourth together shorter than the second; pronotum trapeziform, its posterior angles rounded; elytra with the sides subparallel ♂, or rounded ♀; tibiæ outwardly with hardly-perceptible spines. We have two British species of the seven European. *Parrulus*, Reut., has occurred in the Channel Islands, and should be looked for here; it may be known by its smaller size.

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|-----|----|--|-----------|
| (2) | 1. | Entirely black; female, second antennal joint fusiform. | GENISTÆ. |
| (1) | 2. | Tibiæ testaceous; female, second antennal joint simple | TIBIALIS. |

H. genistæ, Scop. (*unicolor*, Hahn; *leptocerus*, D. & S.).—Dull black, densely clothed with white scale-like pubescence. Antennæ with the second joint in the ♂ slightly thickened towards the apex, about once and a quarter as long as the third and fourth together, strongly fusiform in the ♀; pronotum transverse, trapeziform, base about twice as wide as the anterior margin; elytra with the cuneus and membrane in the ♀ much deflected, membrane black, white just along the edge of the cuneus; legs entirely black.

L. $4\frac{1}{2}$ mm.

On *Broom*, Hastings; Northumberland, *Bold*; Tonbridge, *Blatch*; Fairlight, Hurst Green, *Butler*; Cliffs Milford Haven, *Marshall*; Norfolk, *Edwards*; Tilgate, *Champion*; Glanvilles Wootton, *Dale*; Cardiff, *Billups*; Colvend, Kirkcudbrightshire on *Genista tinctoria*, F. B. *White*.

H. tibialis, Hahn.—Like the preceding in colour, but rather longer in form and larger, with the tibiæ reddish-testaceous; second joint of the antennæ in the ♂ not thickened towards the apex, once and a half as long as the third and fourth together; simple also in the ♀, squamous hairs less white, rather yellowish; pronotum not so much widened posteriorly, base hardly twice as long as the anterior margin; elytra rather longer, and in the ♀ not so much deflected posteriorly.

L. $5-5\frac{1}{2}$ mm.

Common on *Broom*, and generally distributed.

ONYCHUMENUS, Reut.

(*Oncotylus*, pars Fieb.)

Subelongate, clothed with fine, very short, regular, pale hairs; eyes prominent, rostrum reaching to the intermediate coxæ; pronotum with the sides sinuate, base sinuate, rounded towards the angles; tibiæ with very fine dark

spines; arolia as long as the claws and attached to them throughout their length.

There is only one species.

O. decolor, *Fall.*.—Grey or yellowish-grey, sometimes with a brownish tint, clothed with fine short semi-erect hairs. Head with a spot at the base more or less continued towards the apex, yellowish; pronotum transverse, with a brownish band across the callosities; scutellum with a yellow spot at each basal angle; elytra more or less widely pale along their lateral margins, which are sub-parallel in the male, slightly rounded in the ♀, membrane smoky, nervures pale; legs with the extreme apex of the tibiae and the tarsi black; abdomen ochreous, more or less banded with grey.

L. 5 mm.

By sweeping, common where it occurs, Wandsworth, Hastings, Southwold, Chobham; Tilgate, Chattenden, *Champion*; Bexhill, Tunbridge Wells, Deal, Ewhurst, Shalford, *Butler*; Norfolk, *Edwards*; Chertsey, Deal, Cowbridge and Taff's Well South Wales, *Billups*; Glanvilles Wootton, *Dale*; Eltham, Dartford Brent, *Douglas and Scott*.

ONCOTYLUS, *Fieb.*

(*Anoterops*, *Fieb.*)

Our one British species of this genus may be known at once from its allies by its black-spotted tibiae, but the distinctive characters of the genus depend on the truncate, not sinuate base of the pronotum, and the long arolia extending almost to three-quarters the length of the claws, the claws themselves are long and narrow, and very slightly curved. There are thirteen species recorded by Puton.

O. viridiflavus, *Goeze* (*setulosus*, *Mey.*).—♂ sub-elongate, ♀ elongate oval; dull greyish-green, clothed with black hairs. Head and pronotum yellowish, the former with several round spots, and the central lobe of the face black, the latter with a transverse spot behind each callosity,

the posterior angles and a transverse spot on the base at each side black; eyes prominent, not touching the pronotum; antennæ with the second joint slender, subequal to the third and fourth together; scutellum with the sides black; elytra elongate, parallel-sided in the ♂, shorter and with curved sides in the ♀, brownish-green, nerves paler, membrane dark, nervures whitish; femora freckled with black; tibiæ with black spots and fine short black spines, also black at the apex; tarsi long and thin, black; abdomen greenish, terminal segments in the ♀ spotted with black above.

L. 8 mm.

On *Centaurea*; Charlwood, near Reigate; Battle, Dallington Forest, Sevenoaks, Stevenage, Ewhurst, Lowestoft, *Butler*; Tilgate, Chattenden, *Champion*; Hurst Wood, Tunbridge Wells, *Douglas and Scott*.

MACROTYLUS, *Fieb.*

(*Macrocoleus*, pars. *D. & S.*, *Saund.*, etc.).

May be known by its very short, strongly-curved claws, which are produced at the base into an acute tooth; the shortness of the claws is a very well marked character, the tarsi at first sight looking almost as if the claws were absent; rostrum reaching to beyond the posterior coxæ, upper surface clothed with black hairs, which are easily rubbed off; tibiæ, except the posterior pair in *Paykullii*, with hardly-distinguishable spines on their outer edge. There are thirteen species recorded by Puton, of which we have two in Britain.

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|-----|---|-------------|
| (2) | 1. Larger, 5-5½ mm.; elytra grey, evenly clothed with black hairs | SOLITARIUS. |
| (1) | 2. Smaller, 3½-4 mm.; elytra green, with patches of black hairs | PAYKULLI. |

M. solitarius, *Mey.*—Greyish-green, densely clothed with black hairs, elongate-oval. Antennæ with the second joint once and a quarter as long as the third, dark at the

base and apex, and distinctly thicker than the third, fourth about a third as long as the third; pronotum much widened posteriorly, base more than twice as long as the anterior margin, sides nearly straight; scutellum convex; elytra with the nerves and the cuneus at the base slightly paler, membrane dusky, with a darker spot just below the cuneus, set off by a hyaline one above and beneath it; cells darker, their nerves white; legs clothed with black hairs.

L. $5-5\frac{1}{2}$ mm.

On *Stachys*; Reigate; Shiere, *Capron*; near Addington on *Ononis*, *Douglas and Scott*; Hurst Green, Ewhurst, Shalford, *Butler*; Mickleham, *Power*; Caterham, *Champion*.

M. Paykullii, *Fall.*.—Green, oblong-oval, clothed with thick black hairs, disposed on the elytra in irregular patches, head sometimes dark at the sides. Antennæ with the first joint and the base of the second more or less dark, third joint about two-thirds as long as the second; pronotum with the anterior margin half as long or more than the base; sides nearly straight, callosities and a dorsal line in the ♂ sometimes nearly black; membrane dusky, nerves vividly white, a quadrate spot below the cuneus touching the lateral margin black, with hyaline surroundings; legs clothed with black hairs, posterior tibiæ with fine black spines.

L. $3\frac{1}{2}-4$ mm.

On *Ononis*, generally distributed in the South of England.

CONOSTETHUS, *Fieb.*

Sub-elongate, clothed with exceedingly short, hardly noticeable pubescence; head short, eyes prominent, vertex with two dark spots in all our species; pronotum short and transverse, with the sides sinuate, base not much wider than the anterior margin, sinuate, callosities transverse and

very strongly marked; elytra widest at the base in the ♂, and gradually narrowed posteriorly, in the ♀ either widest in the middle or with the sides sub-parallel to the middle and then converging to the apex, cuneus long and narrow, anterior femora, especially in the ♂, bent inwards; tibiæ with fine black spines; claws elongate; arolia short. We have three out of the four European species.

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|-----|----|--|----------|
| (4) | 1. | Third joint of antennæ longer than the second and slightly curved. | |
| (3) | 2. | Antennæ longer, the third joint more than twice as long as the fourth in the male, twice as long in the female | SALINUS. |
| (2) | 3. | Antennæ shorter, the third joint about twice as long as the fourth in the male, not twice its length in the female | BREVIS. |
| (1) | 4. | Third joint of antennæ straight, shorter than the second | ROSEUS. |

C. salinus, *Sahlb.* (*griseus*, *D. ♂ S.*).—Yellowish-grey, head yellow, with two dark spots on the vertex, antennæ very long, thick and black in the ♂, shorter, thinner and brownish in the ♀, with the basal joint pale, third joint curved, distinctly longer in both sexes than the second; pronotum with the sides sinuate, its posterior angles produced and somewhat reflexed, base deeply sinuate in the middle, rounded near the angles, callosities darker, lateral margins and dorsal line pale; scutellum with a pale dorsal line or entirely pale; elytra elongate ♂, or with the sides rounded ♀, lateral margins and cuneus pale, membrane dusky, extending beyond the apex of the abdomen, or about to it in the brachypterous form; legs pale, tarsi dark.

L. $4\frac{3}{4}$ mm. ♂, $4\frac{1}{4}$ mm. ♀.

Gravesend, on *Arenaria maritima*, *Dr. Power*; Hunstanton, Norfolk, *Edwards*; Whitstable, *Champion*.

C. brevis, *Reut.*—Very like the above, but shorter, with shorter antennæ, the second joint in the ♂ not being more than once and a quarter the width of the head across the eyes, and scarcely longer than the width between the

eyes in the ♀; the elytra are distinctly shorter in proportion to their width, and in the brachypterous ♀ do not cover the apex of the abdomen; legs shorter and somewhat stouter.

L. 4 mm. ♂, $3\frac{1}{2}$ mm. ♀

Saline damp places on the shore near Forres, *Reuter*.

C. roseus, *Fall.*—About the size of *brevis*, but recognizable at once by the slender antennæ and the pink-brown or pink striped elytra. Head and pronotum in the ♂ grey, or in the ♀ green, lateral margins and dorsal line of the latter pale; antennæ with the third joint shorter than the second; pronotum very transverse, sides and base sinuate; callosities very large, with a deep impression behind them; scutellum grey or green, with a pale dorsal line; elytra elongate, widest at the base in the ♂, with the clavus and corium inwardly pinkish-brown, parallel-sided to about the middle ♀, pink on the clavus and corium inwardly, in both sexes pale whitish along the lateral margin; cuneus pale; legs pale, tarsi darker.

L. $3\frac{1}{2}$ –4 mm.

Common, but local, by sweeping in dry places, Reigate, Coombe Wood, Hampton Wick, Woking; Norfolk, *Edwards*; Epping Forest, *Marshall*; Weybridge, *Champion*; Oxshott, *Billups*; Eltham, *Douglas and Scott*; Scarborough, *Wilkinson*.

HOPLOMACHUS, *Fieb.*

Oval, very closely allied both to *Macrotylus* and *Macrocoleus*, from both of which it differs in the longer apical joint of the tarsi, which is subequal to the second, and from the former also by the longer claws, and from the latter by the more curved form and stronger basal tooth of the claws. There is only one species, whose black and brown colour is unlike that of any of its neighbours.

H. Thunbergii, *Fall.*—Surface densely clothed with

black hairs; head black, a transverse spot on the vertex and a longitudinal spot on the face, sometimes united, yellow; antennæ black, second joint sometimes paler, in the ♂ much thicker, in the ♀ scarcely thicker than the third, nearly as long as the third and fourth together; pronotum greenish-brown, callosities black, dorsal line pale, sides nearly straight; scutellum with the dorsal line and a spot on each side often pale, and often with a black transverse line near the base; elytra brownish, the margins, nerves, and sutures paler, membrane dark, the nervures pale whitish; legs brownish, femora spotted with black towards the apex, tibiæ at the extreme apex and the tarsi black.

L. 4-4½ mm.

On *Hieracium Pilosella*, Chobham; Darent Wood, Billups; Knighton Heath, Dale; Bewdley Forest, on *Hieracium Blotch*; Boxley Hills, Kent, Marshall; Langstone Point Dawlish, among *Anthyllis* and *Ononis*, Purjitt; Reigate.

MACROCOLEUS, Fieb.

(*Tinicephalus*, Fieb.)

Under this genus I have included *Macrocoleus* and *Tinicephalus*, which Dr. Reuter maintains as distinct. They differ mainly in the form of the xyphus. Only one of our species, *hortulanus*, belongs to *Tinicephalus*, and I think it is better to treat the latter as a subgenus of *Macrocoleus*. The genus, as thus considered, may be known from its congeners by its long claws, oval shape, and the form of the posterior tarsi, the second joint of which is longer than the third, the lateral margins of the pronotum are not acute, and in our British species the rostrum reaches to about the posterior coxæ; all the tibiæ have black spines. We have three species of the nineteen recorded by Puton.

- (4) 1. Xyphus concave, acutely margined, surface clothed with black and paler hairs intermixed, or with black only. (Subg. *Macrocoleus*.)

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| (3) | 2. Clothed with soft pale pubescence mixed with fine dark hairs | MOLLICULUS. |
| (2) | 3. Clothed with thick black hairs | TANACETI. |
| (1) | 4. <i>Xyphus</i> convex, immarginate, surface clothed with pale and dark hairs mixed. (Subg. <i>Tinicephalus</i> .) | HORTULANUS. |

M. molliculus, *Fall.*—Greyish-green, clothed with fine soft pale and brown hairs intermixed, elongate oval ♂, or oval ♀, second joint of the antennæ thickened in the ♂, shorter than the third and fourth together; pronotum transverse, sides nearly straight, base twice as wide ♂, or once and a half ♀, as the anterior margin, base nearly straight; elytra with the clavus cuneus, and a central band more or less brown, membrane slightly dusky, with a darker spot below the apex of the cuneus, nervures pale; tibiæ with black spines, tarsi slender, black.

L. 4–5 mm.

On *Tanacetum* and other plants, not rare, and widely distributed.

M. tanaceti, *Fall.*—Very like *molliculus*, but of a yellower colour, as a rule, although I have males nearly as green as that species; the thick black hairs, however, with which the entire surface of the insect is densely clothed will at once distinguish it; in the ♀ the elytra have rarely any darker band; the anterior coxæ and femora each bear a row of black spines, which in *molliculus* are represented by pale setæ.

L. $4\frac{1}{2}$ – $5\frac{1}{2}$ mm.

On *Tanacetum*, Chobham; on *Achillea*, Surbiton; Shalford, *Butler*; near Exeter, *Parfitt*; Instow, North Devon, abundant, *Fowler*.

M. hortulanus, *Mey.*—Smaller than either of the preceding, brownish green, clothed with black and paler hairs intermixed; head and antennæ yellowish or yellowish-green; pronotum dull green, fading to yellowish, in the male with a V-shaped dark mark between the callosities, sides nearly straight, base slightly sinuate; elytra dusky

green, nerves rather paler, clavus and corium inwardly slightly darker, membrane dusky, nervures pale whitish; femora freckled with a few darker spots near the apex; tibiae with black spines, apex of the tarsi black.

L. $3\frac{1}{2}$ –4 mm.

On *Ononis*, Reigate Hill; on *Helianthemum*, Tring Hills, Herts, *Piffard*; Caterham, *Champion*; Lowestoft, *Thouless*; Darenth Wood, Mickleham; Pitlochry, *Norman*.

AMBLYTYLUS, *Fieb.*

A genus which may be known from *Macrocoleus*, its nearest ally, by the slightly-reflexed sides of the pronotum, and in our British species by the long rostrum, which extends beyond the posterior coxæ, and by the form of the head, which is longer and less declivous. We have three British species of the seven recorded by Dr. Puton.

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| (2) | 1. Membrane milky white, with a brown spot
across the apex of the cells | DELICATUS. |
| (1) | 2. Membrane more or less dusky, unspotted. | |
| (4) | 3. Male and female nearly similar in form, densely
clothed with brown-black hairs | AFFINIS. |
| (3) | 4. Male much narrower than the female, clothed
with pale hairs | BREVICOLLIS. |

A. delicatus, *Perr.*—♂ narrow, subelongate, ♀ sub-oval, pale yellowish green, clothed with very fine whitish hairs and occasional longer brown bristles; head green, about as long as wide, second joint slightly longer than the third, and in the ♂ much thicker; pronotum green in front, ochreous posteriorly, anterior margin rather more than half as long as the base, sides slightly raised in front; elytra pale ochreous, inclining to green on the clavus, cuneus and apex of the corium brownish, membrane milky white, nervures pale, cells brown across their apices, and a brown band extends from the apex of the cuneus to that of the larger cell; abdomen green; tibiae with pale brownish spines.

L. $4\frac{1}{2}$ –5 mm.

On *Gnaphalium germanicum*, Woking, 1888. The actual locality has been destroyed, and I have looked for it every year since within a few yards of where it occurred, but without success.

A. brevicollis, *Fieb.*—♂ elongate oval, greenish grey; ♀ oval, ochreous; both sexes clothed with pale hairs. Head slightly longer than the pronotum, greenish in the ♂, ochreous in the ♀, second joint of the antennæ not quite so long as the third and fourth together, thickened in the ♂; pronotum in the ♂ greenish grey on the disc, inclining to green round the callosities and to ochreous at the sides, in the ♀ ochreous, slightly tinged with green, base about once and a half as long as the anterior margin, sides slightly sinuate, raised; elytra with the sides subparallel ♂, or rounded ♀, ochreous, with a dark greyish shade covering the clavus and inner portion of the corium, membrane dusky, cells rather darker in most specimens, nerves pale; femora with a few dark spots near the apex.

L. 4–4½ mm.

By sweeping grass, &c., Woking, Chobham, and probably elsewhere, but very likely mixed with *affinis*, or the ♂ possibly mistaken for *Onychumenus decolor*, which it somewhat resembles.

A. affinis, *Fieb.*—Very like the preceding, but larger, ochreous, without decided green tints in either sex, both sexes suboval in form, and densely clothed with blackish brown hairs, male darker than the female; the pronotum, except the dorsal line and lateral margins, and the elytra between the nervures, often entirely greyish brown; in the ♀ the entire insect is generally ochreous, in the ♂ the abdomen is black above. Dr. Reuter gives this character to both sexes, but in all my females the abdomen is pale above except at the extreme base.

L. 5 mm.

By sweeping grass, &c., generally in dry places, Woking, Reigate, Hampton Wick, Tunbridge Wells; Eltham, *Douglas*

& Scott; Ashtead, *Champion*; Hurst Green, Battle, Ewhurst, at roots, *Butler*; Norfolk, *Edwards*; Lee, *Billups*.

HARPOCERA, Curt.

This curious genus, our British species of which is as large as a *Calocoris*, may be at once known by the form of its antennæ; these in the ♂ have the second joint about as long as the first, bent and angularly produced at the apex on the under side, and the third joint bent, and much longer than the second; in the ♀ the second joint is more than twice as long as the first and simple, the third is bent and much longer than the second; rostrum only reaching to the anterior coxæ; the male is narrower than the female, and its front tibiæ are very long and curved, the intermediate and posterior pairs slightly so, in the ♀ the posterior pair, only, show a slight curvature; all the pairs with black spots and spines.

H. thoracica, Fall.—Head black, often with a central stripe, and the transverse carina of the vertex, white; antennæ with the first and second joints generally pale, more or less freckled with brown, third and fourth darker in the ♀; pronotum with the base in the ♂ more than twice, in the ♀ more than four times, as long as the anterior margin, sides sinuate ♂, rounded ♀, base sinuate in both sexes, colour black, with the extreme base, and a dorsal line, more or less pale; varying to ochreous, with a spot across the callosities only, black; scutellum brown, its apex pale; elytra brown, varying to ochreous, cuneus always brown, pale at the base; legs reddish testaceous; posterior femora dark at the apex; tibiæ paler, their extreme apices and the tarsi black; beneath pale, or with the sides and the apex of the abdomen black.

L. 7 mm.

On oaks, generally distributed, but rarely very abundant.

BYRSOPTERA, Spin.

Quite distinct from any of the allied genera, and more closely resembling *Mecomma*, from which, however, the hook-like nerve of the wing-cell will distinguish it at once. ♂ macropterous; ♀, as far as I know, always brachypterous. ♂ in form like a narrow *Mecomma*; head nearly as wide as the base of the pronotum, antennæ slender, rostrum reaching to the posterior coxæ; pronotum with the sides and base sinuate; elytra elongate, parallel-sided. ♀ with the pronotum somewhat cylindrical, its sides rounded in front and only slightly divergent posteriorly; elytra in one piece, very convex, widest posteriorly, their hind margin rounded; tibiæ in both sexes with very fine spines.

B. rufifrons, Fall.—Black-brown, clothed with very fine pale hairs, elytra paler in the ♂, head red in the ♀. Antennæ with the first and second joints black in the ♂, the apex of the former sometimes paler, second in the female pale, with the extreme base and apex widely black, third and fourth joints very slender and pale in both sexes; ♂ with the cuneus of the elytra pale, elytra in the ♀ not quite covering the very shining abdomen, three times the width of the pronotum in their widest part; legs very pale testaceous in both sexes.

L. $4\frac{1}{4}$ mm. ♂, $3\frac{1}{2}$ mm. ♀.

By sweeping, generally distributed in the South of England.

PHYLUS, Hahn.

Macropterous in both sexes, rather flat and parallel-sided, eyes large, head not nearly so wide as the base of the pronotum, second joint of the antennæ subequal to the third and fourth together; pronotum trapezoidal, sides straight, base slightly sinuate; elytra elongate, more than three times as long as wide; legs slender, tibiæ with fine spines.

We have three British species of the five that occur in Europe, etc.

- (4) 1. Pale orange-yellow, membrane clear.
 (3) 2. Head and under-side pale PALLICEPS.
 (2) 3. Head and underside black MELANOCEPHALUS.
 (1) 4. Brown or greyish-brown, sometimes
 nearly black CORYLI.

P. palliceps, *Fieb.*—Shining, entirely pale orange-yellow or flavous, clothed with pale yellow hairs; membrane clear or sometimes with a slightly darker apical cloud.

L. 6 mm.

On *oaks*; not quite so common as the following, but often occurring with it.

P. melanocephalus, *Linn.*—Only differs from the above, as far as I am able to discern, by the black head and black underside, and also, as Reuter points out, by the extreme base of the first antennal joint being black or fuscous.

L. 6 mm.

On *oaks*; common and generally distributed.

P. coryli, *Linn.* (*var. avellanæ*; *H. Schf.*).—Very like the two preceding in shape, but with the cuneus and membrane shorter; black, brown, or pale greyish-brown, never clear orange or yellow, cuneus in the pale examples generally darker than the elytra; membrane dusky or nearly black, a streak along the edge of the cuneus hyaline; legs and antennæ very pale ochreous.

L. 5 mm.

Common and generally distributed on *Corylus*.

PLESIODEMA, *Reut.*

Oval, clothed with pale hairs, but without deciduous scale-like pubescence, male more elongate, head short, face nearly vertical, rostrum reaching beyond the posterior coxæ, pronotum with the sides and base nearly straight, tibiæ with pale spines, femora unspotted, posterior tarsi with the third joint subequal to the first and second together. There is only one species of this genus.

P. pinetellum, *Zett.*—♂ black-brown, ♀ head and pronotum brown, elytra paler, both sexes clothed with grey pubescence; antennæ ochreous, second joint in the ♂ compressed and thickened, as long as the third and fourth together; pronotum very transverse; elytra in the ♂ brown, base of the cuneus paler, ♀ with the elytra brownish ochreous, corium at the apex outwardly, and cuneus darker, base of the latter pale, membrane slightly dusky, a line along the margin of the cuneus hyaline; legs dusky ochreous, tibiæ with pale spines, tarsi brown.

L. 3-3½ mm.

On *firs*; Perth, *Reuter*; Aviemore, *Champion*; Forres, *Norman*.

ATRACTOTOMUS, *Fieb.*

May be known from any of the other genera with hook-like nerve to the wing cell, except *Psallus*, by its pale fragile deciduous pubescence; from *Psallus* it may be known by the considerably incrassated, densely pilose second joint of the antennæ, which is more thickened in the ♀ than in the ♂. We have only two British species of the fourteen recorded by Dr. Puton.

- (2) 1. Larger, more convex, male with the second antennal joint incrassated, fusiform, about as long as the width of the head, female, vertex nearly twice as wide as the eye . MALL.
- (1) 2. Smaller, less convex, male, second antennal joint less incrassated, parallel-sided, much longer than the width of the head, female, vertex, not nearly twice the width of the eye MAGNICORNIS.

A. mali, *Mey.*—Blackish-brown, tending to reddish in some examples, slightly shining, clothed with black hairs, and densely with pale whitish deciduous ones; antennæ with the third and fourth joints thin and pale, fourth about four-fifths as long as the third, second very much incrassated, fusiform, and densely clothed with black hairs, first subtriangular, vertex much wider than the eye in the ♂, nearly twice its width in the ♀; pronotum with the sides rounded,

base nearly straight; elytra with the suture between the corium and cuneus pale outwardly, membrane dusky, nerves paler, a hyaline line along the margin of the cuneus; tibiæ paler with strong black spines.

L. 3-4 mm.

On fruit trees, Chobham; Barnet, on *Cratægus*, *Butler*; Bugbrooke, Northants, *Marshall*; Cannock Chase, *Blatch*.

A. magnicornis, *Full.*—More elongate and much flatter than *mali*, the ♂ distinguishable at once by its long form, the long parallel-sided second joint of the antennæ, in these respects it is more liable to be confounded with *Psallus obscurellus*, whose antennæ, however, are pale; both sexes may be known by the narrow vertex, this in the ♂ is hardly wider than the eye, in the ♀ it is about once and a half as wide; the membrane also is paler.

L. $3\frac{1}{2}$ ♂ mm. $3\frac{1}{4}$ ♀.

Conifers; commonly where it occurs; Croydon, West Wickham, Bromley, Woking; Sheire, *Capron*; Norfolk, *Edwards*; Hurst Green, Wymondley, Barnet, Mickleham, Shalford, Ewhurst, Somerleyton, Suffolk, *Butler*; Headley Lane, *Billups*; Glauvilles Wootton, *Dale*.

PSALLUS, *Fieb.*

An extensive genus, many of whose species are extremely closely allied. It may be known by the wing cell having the hook-like nerve, by the shining upper surface, the slender second antennal joint, and the pale, easily-rubbed-off pubescence; the species are mostly oval, and the ♂ is slightly more elongate than the ♀, and its antennæ have the second joint longer and thicker; in some species also the sexes vary notably in colour; the tibiæ are armed with strong black spines, rising from black spots. Rostrum reaching to the intermediate coxæ or beyond them, apical joint of the tarsi as long as or longer than the first and second together. There are fifty-one species recorded by

Puton in his catalogue, of which our fauna possesses fourteen.

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| (4) | 1. Second joint of the antennæ black or partly black. | |
| (3) | 2. Larger; male with third and fourth joints of antennæ dark, fourth about half as long as the third, female, second joint dark, paler in the middle | BETULETI. |
| (2) | 3. Smaller; male, third and fourth joints of antennæ pale, fourth two-thirds as long as the third, female, second joint pale, black at the apex | AMBIGUUS. |
| (1) | 4. Second joint of the antennæ pale. | |
| (10) | 5. Posterior femora not spotted. | |
| (7) | 6. Black-brown in both sexes, cuneus entirely dark | OBSCURELLUS. |
| (6) | 7. Not black-brown in both sexes, cuneus pale at the base. | |
| (9) | 8. Smaller, shorter and broader, pubescence fine, golden, and more regular | VARIABILIS. |
| (8) | 9. Larger, longer, pubescence coarser, white, and less regular | QUERCÛS. |
| (5) | 10. Posterior femora spotted, often very dark, but always with still darker spots. | |
| (24) | 11. Cuneus not entirely white. | |
| (13) | 12. Densely clothed with silvery hairs | ROTERMUNDI. |
| (12) | 13. Not densely clothed with silvery hairs. | |
| (15) | 14. Cuneus red at the apex | ALNICOLA. |
| (14) | 15. Cuneus white at the apex. | |
| (17) | 16. Femora very pale, thickly freckled with black spots | FALLINII. |
| (16) | 17. Femora towards the apex only, spotted with black, apex brown or reddish. | |
| (19) | 18. Fourth joint of antennæ two-thirds as long as the third | LEPIDUS. |
| (18) | 19. Fourth joint of antennæ about half as long as the third. | |
| (21) | 20. Elytra, especially the clavus, freckled with darker red spots | ALBICINCTUS. |
| (20) | 21. Elytra not freckled with darker spots. | |
| (23) | 22. Larger, fourth joint of antennæ rather shorter in proportion to the third | VARIANS. |
| (22) | 23. Smaller, fourth joint of antennæ rather longer in proportion to the third | DIMINUTUS. |
| (11) | 24. Cuneus entirely white. | |
| (26) | 25. Posterior femora pale | SANGUINEUS. |
| (25) | 26. Posterior femora dark | SALICELLUS. |

P. betuleti, *Fall.* (*ambiguus*, *D.* & *S.*).—Clothed with

pale deciduous hairs, male brown-black, elongate-oval, ♀ ochreous-red, broader; antennæ black with the second joint in the ♂ more than twice as long as the third, third twice as long as the fourth; second in the ♀ more than twice as long as the third, paler in its centre, third not quite twice as long as the fourth; pronotum much raised posteriorly, base and callosities black in the ♀; elytra in ♀ with the region within the nerves of the corium darker, cuneus narrowly pale at the base in both sexes; membrane dusky, pale just below the apex of the cuneus; femora pale at the apex in the ♂, red in the ♀, tibiæ pale with strong black spines in both sexes, their apices and tarsi dark; orifice of sac white.

L. $5\frac{1}{2}$ mm.

The largest of our species; occurs on *birch*, and is generally distributed and common.

P. ambiguus, *Fall.* (*obscurus*, *D.* & *S.*).—Smaller than the preceding; male with the third and fourth joints of the antennæ pale, fourth two-thirds as long as the third, second joint shorter than in *betuleti*, about as long as the base of the pronotum; elytra rather less elongate; ♀ easily known by the pale second joint of the antennæ, whose apex is broadly black; also by the rather duller ochreous colour, often inclining to grey, or brown; pronotum unicolorous, brown, blackish or ochreous; cuneus always reddish; both sexes with the sac orifice black.

L. $4\frac{1}{2}$ mm.

On apple trees, etc., generally distributed.

P. obscurellus, *Fall.* (*pini*, *D.* & *S.*; *pityophilus*, *Flor.*).—Small, oval, blackish-brown, clothed with short black hairs, and fine silvery-gold deciduous pubescence; antennæ pale, second joint longer than the third and fourth together, basal joint dark in the ♂, vertex in the ♂ slightly wider than each eye, in the ♀ nearly twice as wide, the eyes being smaller; membrane slightly dusky, the cells darker, a clear spot below the apex of the cuneus; tibiæ dark in the ♂, paler in the ♀, with strong black spines.

L. $3\frac{1}{2}$ mm.

Common on *conifers*; could only be confounded with the ♂ of *Plesiodema* or *Atractotomus magnicornis*, from the first the pale deciduous pubescence will distinguish it; from the second the slender, pale, second antennal joint.

P. variabilis, Fall. (var. *simillimus*, D. & S., Saund.; var. *Whitei*, D. & S.).—Shining; ♂ brown, ♀ very variable in colour, both sexes clothed with fine dark hairs and pale yellow deciduous pubescence, cuneus pale at the base; antennæ pale, its second joint in the ♂ slightly thickened, about twice as long as the third, which again is about twice as long as the fourth; in the ♀ the third joint is about two-thirds as long as the second; the general colour of the ♀ may be of a uniform orange-brown, or orange-red, or the head may be blackish-brown as well as the pronotum in front, the scutellum, and a patch on each elytron; or the head, pronotum, and scutellum may be brown, and the corium brown posteriorly, the cuneus red, pale at the base; the membrane is dusky, with a pale spot below the cuneus; the femora may be red or brown, the tibiæ are always whitish, with black spines rising from black spots, coxæ and trochanters not pale.

L. $3\frac{3}{4}$ mm.

Common and generally distributed, on *oak*, *maple*, *ash*, and other trees. For a long time I have maintained our *simillimus* as a distinct species, but I believe Dr. Reuter is right in sinking it to the rank of a variety; the true *simillimus*, Kbm., has not yet been found with us.

P. quercûs, Kbm.—Larger than *variabilis*, and longer in the ♂, and the deciduous pubescence coarser and white, not golden, second joint of the antennæ longer, fourth joint about half as long as the third. General colour less variable and both sexes more alike, brownish-red, pronotum and scutellum sometimes darker; cuneus red, narrowly pale at the base; vertex of the ♂ about once and a half, ♀ about twice as wide as each eye; posterior femora longer and

more slender in the ♂, bright red in both sexes, coxæ and trochanters pale in the ♂, white in the ♀.

L. ♂ 5 mm, ♀ 4½ mm.

Oaks, Bromley, not rare, but local; Darenth, *Douglas & Scott*; Hastings; Leicester, *Marshall*; Sutton Coldfield, *Blatch*.

P. Rotermundi, *Scholtz*.—Short, oval, densely clothed with deciduous white hairs, greyish-brown ♂, or pale greyish-white, more or less suffused with greyish-brown ♀, cuneus bright red margined with white. Head whitish, often with a central black stripe in the ♂; vertex more than twice as wide as the eye, antennæ with the second joint longer than the third and fourth together; pronotum in the ♂ dark, with the anterior margin and sides pale whitish, in the ♀ pale, with a line across the callosities dark; elytra with the clavus and lateral margin pale in the ♂, in the ♀ pale whitish, with the spaces between the nerves darker, membrane slightly dusky, nervures white; femora and extreme base of the tibiæ reddish, the former spotted at the apex, tibiæ pale, with strong black spines, their extreme apex and the tarsi black.

L. 4 mm.

On *Populus alba*, Reigate, Herne Bay, Woking; Norfolk, *Edwards*; Bath, *Bluthwayt*; Leicester, Hainault Forest, *Marshall*; Boxmoor, *Piggard*.

P. Fallenii, *Reut. (salicis, D. & S.; roseus, Saund., Synopsis)*.—Of rather a brick red, clothed with dark hairs, intermixed with pale golden deciduous pubescence; eyes very large in the ♂, vertex being scarcely broader than each eye, in the ♀ nearly twice as broad, second joint of the antennæ in the ♂ very long and thick, much longer than the third and fourth together, in the ♀ about subequal to them, third joint not half so long as the second in the ♂, more than half its length in the ♀; pronotum with brown atom-like spots. Elytra parallel-sided in the ♂, in both sexes with the disc somewhat darker and with the

cuneus widely pale at the base, very narrowly at the apex, base of the elytra paler in the ♀, membrane dusky, cells at the base, a spot below the cuneus, and a curved band on the disc hyaline, legs very pale, femora freckled with black, tibiæ with strong black spines.

L. ♂ 5 mm., ♀ 4 mm.

On *sallows*, not rare, and generally distributed.

P. alnicola, *D. & S.* (*alni*, *D. & S.*).—Very like the preceding, but rather smaller, and of a brighter red, with the pubescence on the elytra collected into spots, cuneus with a very narrow white line at the base near the side, apex not pale, membrane dusky, base of the cells, a spot below the cuneus and a wide band, interrupted near the side, across the disc hyaline; femora in the ♂ reddish at the apex, tibiæ with very strong black spines and black spots.

L. $3\frac{3}{4}$ mm.

Alders and *sallows*, Reigate, Esher, Chobham, Woking; Bath, *Blathwayt*; Norfolk, *Edwards*; Dean Forest, *Blatch*; Hurst Green, *Shalford*, *Butler*; Hornsey, *Marshall*; Taff's Well South Wales, *Billups*; Forres, *Norman*.

P. lepidus, *Fieb.* (var. *minor* = *roseus*, *D. & S.*; *Kirschbaumi*, *Saund.*).—Entirely brown, varying in var. *minor* to orange-yellow, with the corium and cuneus red, the latter in both varieties narrowly pale at the base; vertex in the ♂ rather wider than the eye, in the ♀ about once and three-quarters as wide, or in var. *minor* twice as wide, antennæ with the third joint nearly twice as long as the fourth, in var. *minor* about once and a half as long; membrane dusky, with a pale spot below the cuneus and a more or less distinct curved band on the disc hyaline; femora brown, varying to reddish-yellow, with rather large black spots.

L. $4\frac{1}{2}$ mm.; var. *minor*, 4 mm.

Both forms of this species occur together on *ash*, and are at first sight distinct enough; there are, however, intermediate forms uniting them, which make one believe in

their specific identity. Not rare and apparently generally distributed.

P. varians, *H. Schf.* (*distinctus*, *D. & S.*).—Varying from pale straw colour to orange-red, clothed with brown, and deciduous golden hairs, but never of the deep brick-red colour of *Fullenii* or the brighter red of *alnicola*, nearly always paler on the head and pronotum, scutellum and base of the elytra; cuneus widely white at the base, narrowly at the apex, membrane dusky, the base of the cells and a spot below the cuneus hyaline, sometimes a hyaline round spot near the outer margin and a vague band on the disc are more or less discernible; femora slightly reddened or darkened at the apex and spotted. Vertex in the male wider than the eye, pronotum without brown atoms; antennæ with the third joint in both sexes quite half as long as the second, apical joint hardly more than half as long as the third; elytra in the ♂ only slightly more parallel-sided than in the ♀.

L. 4–4½ mm.

Very common on *oaks*, and also on other trees.

P. diminutus, *Kbm.*—In general appearance exactly like *varians* in miniature, from which it differs structurally in having the apical joint of the antennæ two-thirds as long as the third, and the genital segment of the male beneath not carinated; this latter character is strongly marked, but the females are very difficult to distinguish, except by size.

L. 3¼ mm.

Not rare, but probably overlooked; on *oaks*, Woking, Chobham; Hastings, Barnet, Ewhurst, *Butler*; Oxshott, *Billups*; Norfolk, *Edwards*; Perth, *Reuter*; Forres, *Norman*.

P. albicinctus, *Kbm.*—About the size of the preceding, but rather shorter and broader, and with the pronotum more convex. It may be known from any of its allies by its rather wider pronotum in front, and by the colour of the

upper surface, especially of the clavus, which is of a greyish tint, freckled with darker red spots, also by the brown atoms with which the head and pronotum are sprinkled; there is a fine pale central line to the pronotum and scutellum, and the hemelytra are of a deeper red than in *diminutus*, the posterior femora are more incrassated, and the anterior tibiæ armed with more numerous and thicker black spines.

L. $3\frac{1}{4}$ mm.

One ♀ on *Salix*, Chobham, July, 1892. Reuter says it occurs also on oaks.

P. sanguineus, *Fab.* (*querceti*, *D.* ♂ *S.*).—Varies in colour from bright red to whitish-grey, with a few small red spots on the elytra, cuneus always white, unspotted; antennæ pale, third and fourth joints together about as long as the second in the ♂, or longer than it in the ♀; vertex once and a half ♂, twice ♀, as wide as the eye; elytra with fine pale hairs somewhat irregularly collected in patches, membrane nearly clear, with a dark transverse line below the cuneus, femora with a few black spots, tibiæ pale, with strong black spines.

L. $3\frac{1}{2}$ –4 mm.

On *Salix*, common and generally distributed.

P. salicellus, *Meyer.*—Subelongate, greyish, densely clothed with long pale and brown hairs intermixed, elytra densely sprinkled with small brown spots; eyes in the ♂ very large and prominent, each nearly as wide as the vertex between them, in the ♀ smaller, not half the width of the vertex, antennæ long and slender, third and fourth joints together considerably longer than the second, fourth two-thirds as long as the third; pronotum short, sides nearly straight; elytra elongate and nearly parallel-sided in both sexes, clothed with pale hairs in patches, clavus paler, cuneus white, membrane dusky, the larger cell except at its apex, a spot below the cuneus, and a broad discal band hyaline, very dark between these latter; legs paler, femora

sprinkled with fine brown spots, posterior femora elongate, brown, posterior tibiæ very long and slender.

L. $4\frac{1}{2}$ mm.

On *Corylus* and *Salix*; Reigate, Wimbledon, Woking, Hastings; Headley Lane, *Billups*; Glanvilles Wootton, *Dale*; Bickleigh, Devon, *Bignell*; Caterham, Tilgate, Darenth, *Champion*; Wickham, Tunbridge Wells, *Douglas* & *Scott*; Netherfield, Battle, Frant, Stevenage, Barnet, Shalford, *Butler*; Lasingham, Birch Wood, *Marshall*; Norfolk, *Edwards*.

PLAGIOGNATHUS, *Fieb.*

Under this name I have included as subgenera four genera as defined by Dr. Reuter. But the genus in the wider application that I have given to it seems to me to be definite, whereas the characters whereon the subgenera are based are to my mind far from being so; and having in view the small number of our British species, I think it is better to keep them all together. The genus in this sense may be known from the others with the hook-like nerve to the wing-cell, by the combination of the following characters: the shining and finely pubescent surface, without deciduous fragile hairs, the simple antennæ, and the black-spined tibiæ. In form they may be oval or oblong-oval, and in some species of the subgenus *Agalvastes* both sexes are dimorphous. We have nine species in this country, out of thirty-seven recorded by Puton as Palearctic.

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|-----|----|--|-------------|
| (2) | 1. | Vertex with a distinctly raised carina, antennæ short, with the second joint longer than the third and fourth together. (Subg. <i>Sthenarus</i> , Fieb.). | ROSERI. |
| (1) | 2. | Vertex without a distinctly-raised carina, third and fourth joints of antennæ together longer than the second. | |
| (8) | 3. | Male more parallel-sided and elongate than the female, femora pale, spotted or lined with black, or surface clothed with silvery white hairs. (Subg. <i>Plagiognathus</i> , Fieb.) | |
| (5) | 4. | Surface clothed with silvery hairs | ALBIPENNIS. |

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|------|-----|--|-------------|
| (4) | 5. | Surface not clothed with silvery hairs. | |
| (7) | 6. | Femora margined with black | ARBUSTORUM. |
| (6) | 7. | Femora spotted at the apex, but not margined with black | VIRIDULUS. |
| (3) | 8. | Male and female nearly alike in shape, femora dark or red, upper surface not clothed with silvery hairs. | |
| (14) | 9. | Spines of tibiæ strong and black, rising from black spots. (Subg. <i>Neocoris</i> , D. & S.) | |
| (11) | 10. | Base of corium pale | BOHEMANNI. |
| (10) | 11. | Elytra entirely dark. | |
| (13) | 12. | Larger, a pale spot near each eye | NIGRITULUS. |
| (12) | 13. | Smaller, head entirely black | PULICARIUS. |
| (9) | 14. | Tibiæ with fine black spines, not rising out of black spots. | |
| (16) | 15. | Base of the elytra pale | SALTITANS. |
| (15) | 16. | Base of elytra concolorous with the rest | WILKINSONI. |

(SUBG. STHENARUS.)

P. Roseri, *H. Schf.*—Oval shining, ♂ and ♀ alike in form, clothed with very fine decumbent pale hairs, varying from black with the extreme base of the corium laterally and the cuneus testaceous, to entirely testaceous with the head only darker; the femora always more or less red, the tibiæ pale with black spots and spines, tarsi with the apex black; the elytra often are only black on the disc of the corium, pale on the clavus and lateral margin, with the cuneus reddish; antennæ with the second joint longer than the third and fourth together; pronotum transversely rugose, sides slightly rounded; elytra punctured, their sides rounded, membrane smoky, often darker towards the apex.

L. 4 mm.

On *Salix*, Bromley; Norfolk, *Edwards*; Battersea, *Marshall*; Oxshott, *Billups*.

(SUBG. PLAGIOGNATHUS.)

P. albipennis, *Fall.*—Pale greyish white, densely clothed with rather long silvery hairs; head darker in front,

antennæ with the first joint dark, second dark at the base, gradually paler to the apex, and slightly thickened apically in the ♂, third and fourth joints pale; pronotum very transverse, sides slightly rounded; elytra with the corium inwardly, and generally the cuneus, except at its base, slightly darker, membrane dusky, nervures and a spot below the cuneus white; femora brownish grey, tibiæ pale, with black spots and spines.

L. ♂ 4 mm. ♀ 3 mm.

On *Artemisia absinthium* and *abrotanum*; Reigate, Southwold, Hayling Island, Woking; Norfolk, *Edwards*; Devon, *Parfitt*; Lasingham, *Marshall*; Colwyn Bay, *Beaumont*; Sheppey, *Champion*; Deal, *Billups*; Portland, *Dale*; Eltham, Lee, *Bignell*.

P. arbustorum, *Fab.*—♂ oblong oval, ♀ oval, both sexes varying from nearly entirely black to ochreous yellow or greyish green, but through all its varieties known by the black first and second joints of the antennæ, and the black margins of the femora; the surface is clothed with black hairs; in the paler varieties the head is always more or less black, and in the darkest the vertex is more or less pale, the membrane is dusky with a clear spot below the cuneus; the femora are ochreous, spotted and margined with black, the tibiæ ochreous with black spots and spines, their extreme base and apex black, tarsi black.

L. 4–4½ mm.

Very abundant on nettles, etc., and generally distributed.

P. viridulus, *Fall.*—Like the preceding in shape, and clothed with black hairs, but always green or ochreous, or greyish green, sometimes with a brownish tinge, head concolorous; it may always be known by the basal joint of the antennæ, which is pale at its extreme apex, with a dark ring below it, and black at its extreme base, the whole joint except the extreme apex is sometimes black in the ♂, the second joint is black only at the extreme base, the

femora are pale, spotted at the apex, but without black edges.

L. $4-4\frac{1}{2}$ mm.

Very abundant, often with the preceding.

(SUBG. NEOCORIS.)

P. Bohemanni, *Fall.*—Flatter and broader than the preceding, brown, clothed with very fine adpressed pale hairs, bases of the corium and cuneus, a spot on each side of the vertex and of the scutellum, and sometimes the dorsal line of the pronotum, pale; femora pale at the base and apex, tibiæ pale with black spots and spines, apex of tarsi black. Head wide, eyes prominent; pronotum not quite twice as broad at the base as long, anterior margin a little more than half as long as the base, callosities strongly marked, sides slightly sinuate, base straight; elytra widest behind the middle, sides rounded; membrane dusky, a clear spot below the apex of the cuneus.

L. $3-3\frac{1}{4}$ mm.

On dwarf sallows, Deal; Barry Island, South Wales, *Billups*.

P. nigrutilus, *Fall.* (*Scotti*, *Fieb.*).—Entirely brown, except the extreme basal angle of the corium, a spot on each side of the vertex, and sometimes of the scutellum, which are pale, otherwise like *Bohemanni*. Dr. Reuter finds the pronotum longer in this species, but I fail to appreciate this character; they are found together, and I strongly suspect they are but varieties.

L. 3 mm.

On *Sallows*, Deal; Marsh Mills, Plymouth, *Bignell*.

(SUBG. AGALLIASTES.)

P. pulicarius, *Fall.* (var. *pullus*, *Reut.*).—Entirely black except the apices or the whole of the femora, the apical joints of the antennæ and the tibiæ. Very like a small *nigrutilus*, but easily distinguished by its wider pronotum in front

the anterior margin being nearly three-fourths as long as the base; surface clothed with fine greyish adpressed hairs; eyes large, not prominent, antennæ with the third and fourth joints and often the apex of the second pale; pronotum transverse, sides straight; elytra with the sides slightly rounded, scarcely widened behind the middle; membrane dusky; femora entirely, or with the apex only, more or less pale, tibiæ with large black spots and strong black spines.

L. $2\frac{1}{2}$ mm.

So far as I can see all our specimens belong to var. *pullus*, *Reut.*

Not very common, but generally distributed, at the roots of grass in dry places.

P. saltitans, *Fall.*—Brownish black, elytra brown, paler at the base, cuneus pale at the base. Head convex, antennæ black brown, third joint scarcely more than half as long as the second, second robust, slightly thickened to the apex; base of the pronotum about as wide as the head in the undeveloped form and not raised, considerably wider than it and much raised in the developed; elytra longer than the abdomen in the developed form, reaching to about the middle of the abdomen in the undeveloped, their apices rounded, in this form the elytra are generally pale also at the apex; hind femora very wide, brown, their apices and the tibiæ paler, the latter with fine black spines, apex of tibiæ and tarsi dark.

L. 3 mm. (macr.), $2-2\frac{1}{2}$ mm. (brach.).

Lowestoft, Coombe Wood, Hampton Wick; St. Leonard's, Shalford, *Butler*; Norfolk, *Edwards*; West Kilbridge, *Douglas*; Chepstow, *Billups*; Colwyn Bay, *Beaumont*; Perth, *Reuter*; Freshwater, Isle of Wight, *Dale*.

P. Wilkinsoni, *D. & S.*—Very like the preceding but entirely brown, without paler markings. Antennæ pale, second joint not nearly twice as long as the third and not so thick as in *saltitans*; tarsi pale; the head also is less

convex and the posterior femora longer and less incrassated.

L. 3 mm. (macr.), 2-2½ mm. (brach.).

Scarborough, *Wilkinson*; Perth, *Reuter*; Strathglass, Braemar, June (1100 ft.), Inverness-shire, Aberdeenshire, and Kirkcudbrightshire, *F. B. White*.

ASCIODEMA, *Reut.*

This genus contains two species, both very pale in colour and clothed with rather long pale hairs. The ♂ is somewhat more elongate and parallel-sided than the ♀, and has the second joint of the antennæ thickened; the rostrum extends to beyond the posterior coxæ; the pronotum is rather short and trapeziform, the base nearly straight; the elytra are very thin and somewhat translucent; the tibiæ are armed with fine dark spines not rising from dark spots, third joint of the tarsi shorter than the second; the wing-cell normally has a hook-like nerve, but in some specimens it is without it. We have both species in England.

- (2) 1. Very pale ochreous, membrane unspotted . . . FIEBERI.
 (1) 2. Greenish grey, membrane with an angular dark line below the cuneus . . . OBSOLETUM.

A. Fieberi, *D. ♂ S. (Psallus)*.—Shining, oblong oval, entirely pale ochreous, clothed with concolorous hairs. Eyes black, vertex once and a half as wide as the eye in the ♂, three times as wide in the ♀, second joint of the antennæ as long as the third and fourth together; pronotum about twice as broad behind as in front, impressed behind the callosities; elytra with the sides slightly rounded; posterior femora slightly incrassated.

L. 4½ mm.

On *Wyeh Elm*, Bovingdon, Herts, *Piffard*; Croydon and Shirley, June and July, on palings, *Douglas and Scott*; Reigate.

A. obsoletum, *D. ♂ S. (Tinicephalus)*, (*Orthotylus*

Saundersi, Reut.).—Like an *Orthotylus* in form and general appearance, greyish or greyish green, clothed with fine white hairs intermixed with darker ones, male subelongate parallel-sided, ♀ suboval, vertex in the ♂ only slightly wider than each eye, in the ♀ nearly three times as wide. Head and pronotum generally greener than the elytra; second joint of the antennæ not so long as the third and fourth together; pronotum in the ♀ not twice as broad at the base as in front; elytra greyish, often more or less brown between the nerves, membrane with a peculiar narrow dusky angularly-shaped mark, which originates near the lateral margin below the cuneus, crosses the membrane for about a third of its width, then turns at right angles and runs towards the apex which it does not quite reach; tibiæ with fine black spines.

L. 4–5 mm.

Common on *Furze* and *Broom*, and generally distributed.

CRYPTOCERATA.

NAUCORIDÆ.

We have two genera in this family, which may be known by the following characters:—Broad-oval; head deeply sunk in the anterior margin of the pronotum, face horizontal or slightly declivous, antennæ four-jointed, hidden below the eyes; scutellum triangular, large; elytra, when developed, with the clavus well marked, membrane sometimes distinct, but in our British *Naucoris* not distinguishable from the corium; anterior femora more or less dilated and flattened, often greatly so, tarsi distinct (*Aphelochirus*) or apparently in one piece with the tibiæ (*Naucoris*), intermediate and posterior tarsi two-jointed and with two distinct claws.

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| (2) | 1. Front tarsi without claws | NAUCORIS. |
| (1) | 2. Front tarsi with two distinct claws | APHELOCHIRUS. |

NAUCORIS, *Geoffr.*

Broad oblong oval, head and eyes buried in the pronotum so that the sides of the pronotum, eyes and front of the head form a continuous curve. Head very wide, twice as wide as long; rostrum short, three-jointed, almost triangular; pronotum with the base only slightly wider than the anterior margin; elytra nearly covering the apex of the abdomen in our species; connexivum clothed at the sides with long hairs, with the posterior angles of the segments produced; anterior femora very much dilated, tibiae curved, the single-jointed, simple, clawless tarsi appearing as a continuation of the tibiae, tarsi of second and third pairs of legs two-jointed, the posterior ones clothed with long natatorial hairs. There are three Palearctic species, of which we have only one.

N. cimicoides, *Linn.*—Shining, slightly convex, ochreous; head and pronotum highly polished, the former with an impressed row of punctures near each eye, and a darker brown mark down the centre; the latter with a row of punctures parallel to the base, and a few other scattered ones at the sides and on the disc, a subquadrate spot on each side of the disc irrorated with brown; scutellum brown, paler at the basal angles; elytra dull, exceedingly closely and finely punctured, greyish brown; connexivum ochreous, apices of the segments darker; legs ochreous.

L. 12–16 mm.

In ponds not rare, and apparently widely distributed.

APHELOCHIRUS, *Westw.*

This very distinct genus, of only one species, may be known at once by its very depressed and short oval form, its narrow head, and parallel-sided sublongitudinal eyes, its long narrow rostrum, the form of its pronotum, whose

base is much more than twice as long as the distance between its anterior angles, and the distinct two-jointed and two-clawed anterior tarsi. The elytra are generally undeveloped and appear only as two transverse scales about twice as long as the scutellum, when developed they have a distinct membrane; ♂ with the last abdominal segment produced and almost covering the genital segments, the division between this and the preceding hardly perceptible, the two segments being apparently amalgamated, in the ♀ all the abdominal segments distinct, the last largely emarginate, exposing the genital segment, connexivum in both sexes spinosely produced at the posterior angles; all the tarsi two-jointed, not hairy and with two claws.

A. æstivalis, *Fab.*—Head, legs and rostrum and sometimes the margins of the pronotum, and abdominal segments testaceous yellow, rest dull dark greyish brown. Head distinctly punctured; pronotum with the anterior margin very deeply excavated, receiving the head almost to the front of the eyes, sides rounded, base straight, its surface and that of the scutellum and elytra very firmly rugose; anterior femora very wide towards the base gradually narrowing to the apex.

L. 10 mm.

Near Bagley Wood, Oxford, *Hope*; in the Evenlode at Eynsham Paper Mills, *Westwood*; Avon, near Bath, *late Mr. C. Broome*; Castessy, near Norwich, *J. L. Brown*; Worcester, *Dale*.

NEPIDÆ.

This family may be known at once by the long and filamentary breathing tubes; there are only two British genera, which differ entirely in form and general facies. The family characters which they have in common, besides

the anal tubes, are the short triangular three-jointed rostrum, three-jointed antennæ, the second joint of which is produced into a lateral process, and the single-jointed, clawless, curved, anterior tarsi; intermediate and posterior legs ambulatory, with one-jointed tarsi terminating in two nearly parallel claws.

NEPA, *Linn.*

Flat, broad, widest behind the centre of the elytra. Head small, not half so wide as the pronotum in front, sunk up to the eyes in a deep emargination of the anterior margin; pronotum with the sides nearly straight; scutellum large, pointed; elytra with a membrane which however has no distinct suture; anal tubes about as long as the elytra; anterior coxæ short and very thick, femora thickened, tibiæ, when folded back, fitting into a groove in their anterior margin. There are only two Palearctic species, of which we have one. Dr. Puton mentions that the eggs are provided with seven filaments which in the ovary embrace the preceding egg.

N. cinerea, *Linn.*.—Dull ochreous brown, femora with darker mottling; surface of pronotum somewhat rugose, of the elytra subreticulate; abdomen above, red at the sides; other characters as given under the generic heading.

L. 18–20 mm.; fil. about 11 mm.

Common in mud at the bottom of ponds, etc., and generally distributed.

RANATRA, *Fab.*

Very elongate, subcylindrical. Head wider than the pronotum in front, eyes very prominent; pronotum more than twice as long as wide, base deeply and angularly emarginate; scutellum diamond-shaped; elytra not quite so long as the abdomen, membrane distinct and divided by a suture from the corium; filaments very long, longer

than the abdomen; legs very long, anterior coxæ elongate and linear, two-thirds as long as the femora, which are slightly curved upwards towards the apex, bearing a sharp tooth on the lower margin just at the commencement of the curve, between which and the apex they are grooved to receive the tibia and tarsus in repose, each side of the groove being finely serrate, tibia and tarsus, when folded back, reaching to just beyond the spine, the tibia curved, terminating just at the spine, the tarsus very short and clawless. We have one of the two recorded Palearctic species. Dr. Puton says that the eggs have two filaments in this genus.

R. linearis, *Linn.*—Ochreous; pronotum constricted towards the middle, with the anterior margin angularly emarginate, sides sinuate, base twice as wide as the anterior margin; abdomen above red.

L. 32–35 mm.; fil. about 28 mm.

Rarer than *Nepa*, in ponds, on the bottom; Wandsworth Common, Hammersmith Marshes, *Douglas and Scott*; Earlswood, *J. Linnell*; Chobham, Evesham, Knowle, *Blatch*; Norfolk, *Edwards*; Lee, Esher; St. Leonards, Guestling, Mill Hill, Middlesex, *Butler*; Holywell, Cardiff, *Billups*; Hayling Island, Wimborne, Cambridge, *Dale*.

NOTONECTIDÆ.

Convex, elytra tectiform; head wider than the pronotum, eyes large, rounded, face convex vertical, antennæ four-jointed, rostrum short, stout at the base, conical, three- to four-jointed; scutellum large; elytra as long as the abdomen; anterior legs with the femora slightly thickened at the base, tarsi two-jointed, quite distinct from the tibiæ and articulated at their juncture, posterior legs with the tibiæ and tarsi, more especially the latter, ciliated in *Notonecta*, simple in *Plea*.

NOTONECTA, *Linn.*

Head broad, eyes large, vertex not half so wide as either eye, rostrum four-jointed; pronotum trapeziform, transverse, very convex, anterior margin slightly produced in the centre, sides straight, base slightly produced and rounded near the angles; scutellum almost as wide as the pronotum, and nearly equilateral; elytra more than twice as long as wide, pointed, membrane distinct; abdomen ciliated at the sides and apex, carinated and ciliated along the centre beneath; sterna with golden hairs; all the tarsi two-jointed, posterior pair with long ciliæ, intermediate femora with a sharp tooth near the apex. There are two European species, of which only one has occurred in this country; the insects swim on their backs, and they are capable of biting with some severity.

N. glauca, *Linn.* (var. *maculata*, *Fab.*).—Head and pronotum shining, ochreous white, or ochreous, the latter generally with a dark band across the base; scutellum dull, black; elytra ochreous, with a row of black spots along the lateral margins, or (var. *furcata*) bluish black, with two elongate spots at the base, or (var. *maculata*) reddish ochreous, irrorated with black or brown spots; legs pale ochreous, or greenish; abdomen black.

L. 15 mm.

Common and generally distributed, the ordinary "water boatman" of our ponds; var. *maculata* rarer.

PLEA, *Leach.*

Minute, not twice as long as wide. Head broad, eyes remote, vertex twice as wide as either eye, rostrum three-jointed; pronotum rounded in front, sides very short, base largely produced and rounded; scutellum narrow, triangular; elytra short, very declivous posteriorly, without distinct membrane, a small portion of each elytron is separated off by a suture close to the exterior basal angle (this

is considered by Messrs. Douglas and Scott to represent the embolium); legs simple, tarsi two-jointed, posterior pair longer than the others, but not natatorial as in *Notonecta*.

P. minutissima, *Fab.*—Ochreous, very strongly punctured; head with a dark central line, elytra sometimes with a transverse band across the centre, and the apex darker.

L. $2\frac{1}{2}$ mm.

Generally distributed.

CORIXIDÆ.

Subelongate or elongate oval, somewhat flat. Head viewed from above, very transverse, wider than the pronotum, very concave posteriorly, so as to cover and embrace the front of the pronotum, eyes large, triangular, with few exceptions, their posterior margins straight, nearly parallel to and touching the posterior margin of the head, looked at from above, their anterior margins form a continuous curve with the front of the head, face elongate, rounded and vertical in front, then produced triangularly with a subventral aspect, antennæ three- to four-jointed, no distinct rostrum, but the underside of the head, in front of the occipital foramen, is divided by a transverse suture from the apical portion, which is rounded in front, and from its margin projects a series of long yellow hairs; pronotum more or less triangular, the sides being exceedingly short, and the base generally produced and angulated; scutellum present, or wanting; elytra with a more or less distinct membrane, and a deep sulcus along the lateral margin; anterior tibiæ very short, tarsi or palæ variable in form, one-jointed, intermediate legs elongate, tarsi one-jointed, terminating in two long narrow claws, posterior tarsi flattened and oar-shaped, two-jointed, their sides clothed with long hairs; pleuræ of the sterna distinct, mesosternum with a lateral piece beyond the pleura

in *Corixa*, called by Sahlberg the parapleura. Segments of abdomen asymmetrical in the ♂, symmetrical in the ♀; male with a "strigil" on the upper side of the sixth segment (see Introd. p. 10) in most of the species. There are two genera in the family, easily distinguished by the presence or absence of the scutellum.

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| (2) | 1. Larger: scutellum wanting . . . | CORIXA. |
| (1) | 2. Very small: scutellum present . . . | SIGARA. |

CORIXA, Geoffr.

To the above characters of the family need only be added, that the scutellum in this genus is wanting, that the base of the pronotum is angulated in the centre (except in *coleoptrata*), and that the antennæ are four-jointed, the fourth joint thin, filiform, the third longer than the first and second, and somewhat swollen. We have twenty species of this genus, of the fifty-five recorded as Palearctic by Dr. Puton; they have been divided into four subgenera, as shown in the table of species.

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| (46) | 1. Pronotum with pale transverse lines. | |
| (5) | 2. Large species, pronotum and elytra not
rastrate, asymmetry to left in the
male. (Subg. <i>Macrocorisa</i> , Thoms.) | |
| (4) | 3. Larger, pronotum with sixteen or more
pale lines . . . | GEOFFROYI. |
| (3) | 4. Smaller, pronotum with 12-14 lines . . . | ATOMARIA. |
| (2) | 5. Smaller species, pronotum and elytra
more or less rastrate, asymmetry to
right in the male. | |
| (43) | 6. Pronotal dorsal carina when present only
visible near the anterior margin. | |
| (34) | 7. Basal joint of posterior tarsi pale at the
apex. Male with a strigil. (Subg.
<i>Corixa</i> , Geoff.) | |
| (11) | 8. Corium not rastrate. | |
| (10) | 9. Pronotum dark with pale lines, the dark
lines as broad as the pale . . . | LUGUBRIS. |
| (9) | 10. Pronotum pale with narrower dark lines. | HIEROGLYPHICA. |
| (8) | 11. Corium rastrate. | |
| (21) | 12. Larger species, 7-8 mm. | |
| (16) | 13. Clavus and corium very rastrate, dull,
transverse pale lines very narrow,
nearly entire. | |

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| (15) | 14. Pronotum with six pale lines, apex of corium not pale | LINNEÆ. |
| (14) | 15. Pronotum with 7-8 pale lines, apex of corium widely pale | SAHLBERG. |
| (13) | 16. Clavus and corium not so deeply rastrate, less dull, transverse pale lines wider, much abbreviated and interrupted. | |
| (18) | 17. Pronotum with six pale lines, pale lines of clavus much dilated inwardly | STRIATA. |
| (17) | 18. Pronotum with 8-9 pale lines. | |
| (20) | 19. Pronotal angles obtuse | DISTINCTA. |
| (19) | 20. Pronotal angles acute | FALLENII. |
| (12) | 21. Smaller species, 5-6 mm. | |
| (23) | 22. Intermediate tibiæ scarcely longer than the tarsi, tarsi subequal in length to the claws | MOESTA. |
| (22) | 23. Intermediate tibiæ much longer than tarsi, tarsi much shorter than claws. | |
| (31) | 24. Pronotum much longer than the vertex of the head, crossed by 7-10 pale lines. | |
| (30) | 25. Male with the facial impression large, continued upwards between the eyes, transverse markings of the corium divided into series by longitudinal dark lines. | |
| (27) | 26. Male facial impression very deep and strongly margined, terminated superiorly in a deep rounded arch, female with two black longitudinal lines on the corium | LIMITATA. |
| (26) | 27. Male facial impression subtruncate superiorly, female with three or four black longitudinal lines on the corium. | |
| (29) | 28. Male facial impression very deep, and concave. Anterior tibiæ much swollen, female more elongate, its palæ short, not twice so long as wide | SEMISTRIATA. |
| (28) | 29. Male facial impression not very deep, anterior tibiæ scarcely swollen, female broader, its palæ more than twice as long as wide | VENUSTA. |
| (25) | 30. Male facial impression very shallow, not reaching upwards between the eyes, markings of the corium not divided into series by longitudinal dark lines | FABRICII. |
| (24) | 31. Pronotum shorter than or as long as the vertex of the head, crossed by 5-6 pale lines. | |
| (33) | 32. Larger, pronotum with six pale lines, facial impression of male distinct, abruptly terminated above | FOSSARUM. |
| (32) | 33. Smaller, pronotum with five pale lines, | |

- male without a distinct facial impression SCOTTI.
- (7) 34. Basal joint of posterior tarsi black at the apex, male without a strigil. (Subg. *Callicorixa*, B. White.)
- (36) 35. Claval markings longitudinal. BOLDI.
- (35) 36. Claval markings transverse.
- (42) 37. Pronotal angles obtuse, markings of corium transverse.
- (41) 38. Pronotum with 8-9 pale lines.
- (40) 39. Claws of intermediate legs as long as the tarsi PRÆUSTA.
- (39) 40. Claws of intermediate legs not nearly so long as the tarsi. SODALIS.
- (38) 41. Pronotum with seven pale lines COGNATA.
- (37) 42. Pronotal angles acute, markings of corium guttulate or vermiculate. CONCINNA.
- (6) 43. Pronotum with a distinct central keel.
- (45) 44. Intermediate tarsi shorter than the tibiae. (Subg. *Glaenocorisa*, Thoms.) CARINATA.
- (44) 45. Intermediate tarsi as long as the tibiae. (Subg. *Oreinocorixa*, B. White.) CAVIFRONS.
- (1) 46. Pronotum without transverse markings. (Subg. *Cymatia*, Flor.)
- (48) 47. Pronotum nearly as long as the head BONSDORFFII.
- (47) 48. Pronotum about one-third as long as the head COLEOPTRATA.

(SUBG. MACROCORIXA, *Thoms.*)

C. Geoffroyi, *Leach*.—Greenish black, entirely smooth and shining; pronotum with sixteen to twenty irregular pale transverse lines; elytra, including the clavus and membrane, closely mottled with short vermiculate pale markings, irregularly punctured; legs testaceous, front tibiae of the ♂ with a spine at the apex, palæ elongate, parallel-sided, rounded on the upper margin close to the blunt apex, lower margin straight, of the ♀ elongate, curved, pointed; intermediate tibiae simple, tarsi shorter than the tibiae, claws hardly shorter than the tarsi.

L. 13-14 mm.

Common and generally distributed.

C. atomaria, *Illig.* (*Panzeri*, *Fieb.*; *affinis*, *Leach*).—Very like the above but smaller, with the pronotum

shorter and consequently with only about fourteen pale lines; the palæ of the front legs in the male shorter, more rounded on their upper margin, and consequently less parallel-sided, those of the female shorter and more curved.

L. 9-10 mm.

Not so common as the preceding, but generally distributed, although not recorded from Ireland.

(SUBG. *CORIXA*, Geoffr.)

C. lugubris, *Fieb.* (*Stål*, *Fieb.*).—Black brown, shining, frontal impression of male short, not extending upwards between the eyes; pronotum and clavus very superficially rastrate (i.e. striated like a file), corium punctured; pronotum with seven pale transverse lines, its angles obtuse; elytra with the markings at the base of the clavus broader and in more regular lines, towards the apex narrower and fragmentary, markings of corium transverse, short and somewhat arranged in longitudinal series, a line at the inner angle of the corium, and a longitudinal line parallel to it, black; palæ of front legs in the male very wide at the base, pointed at the apex, apex of intermediate tarsi black.

L. 6-6½ mm.

Common and generally distributed, often in brackish water.

C. hieroglyphica, *Duf.*—Frontal impression of the ♂ very deep, extending upwards between the eyes in a well-defined arch; pale greenish or yellowish white; pronotum with 7-8 narrow black transverse lines, finely rastrate; clavus rastrate, pale at the extreme base, otherwise traversed by short irregular black lines, corium not rastrate, punctured, with short, transverse fragmentary dark markings arranged in three or four series; legs entirely pale, palæ of ♂ straight on the anterior edge, regularly curved on the posterior.

L. 5½-6½ mm.

Common, often with the preceding, generally distributed.

C. Linnæi, *Fieb.*—Dark brown-black; frontal impression of ♂ scarcely indicated; entire surface of pronotum and elytra, except the membrane, very rastrate; pronotum with 5-6 lines, and the margins pale; elytra with the markings of the clavus and corium very narrow, wavy and almost entire, continued to the apex; legs pale, palæ of ♂ concave in front, widened and blunt at the apex.

L. 7-8 mm.

Common and generally distributed.

C. Sahlbergi, *Fieb.*—Very like *Linnæi*; frontal impression of the male distinctly marked and abruptly terminated on its superior margin; pronotum more elongate with from 7-9 transverse pale lines; apex of the corium pale, the transverse lines there becoming obliterated; anterior palæ of the ♂ much as in *Linnæi*, intermediate claws shorter than the tarsi.

L. 7-8 mm.

Common and generally distributed.

C. striata, *Fieb.*—Rather an elongate species, easily known by the six pale lines of the pronotum, whose angles are obtuse, by the basal pale lines of the clavus being much dilated inwardly, and by the discal markings of the corium being separated by a broad dark line, both from the claval and lateral margin; intermediate claws shorter than the tarsi; facial impression of the ♂ very slight, abruptly and truncately terminated superiorly; palæ shortly cultrate.

L. $6\frac{1}{2}$ -7 mm.

Very common and generally distributed.

C. distincta, *Fieb.* (*Douglasi*, *Fieb.*).—Easily known from the above by the 7-8 pale lines of the pronotum, the narrower, scarcely, if at all, dilated lines of the clavus, the longer intermediate claws, which are as long as or longer than the tarsi, and the finer transverse lines of the corium, which has usually a dark line towards the apex of the

claval suture only; frontal impression of male shallow, somewhat cordate, not extending between the eyes; palæ broadly cultrate.

L. $7-7\frac{1}{2}$ mm.

Not rare, Reigate, Chobham; Norfolk, *Edwards*; Bridgenorth, Devon, *Marshall*; Newcastle, Ireland, *Champion*; Forres, *Norman*; Perth and Shetland, *Reuter*; Strathglass and Achilty, *B. White*; Glanvilles Wootton, Weybridge, *Dale*; Plymbridge, Yelverton, *Bignell*.

C. *Fallenii*, *Fieb.*—Very like *distincta*, but at once known by the acute lateral angles of the pronotum; it is generally but not always paler in colour; the palæ of the male are truncate at the base, their upper margins rounded; facial impression shallow, truncate above, not extending upwards between the eyes.

L. $7-7\frac{1}{2}$ mm.

Common and generally distributed.

C. *mœsta*, *Fieb.*—Small, rather short, easily known by its obscure, indistinct markings, which gradually fade off towards the apex of the corium, and by the form of the intermediate legs, the tarsi of which are almost as long as the tibiæ, and the claws not or scarcely longer than the tarsi; pronotum with about seven pale lines; facial depression of the ♂ small, shallow, rounded above, not produced between the eyes; palæ subparallel-sided, blunt at the apex.

L. 5 mm.

Common and generally distributed.

C. *limitata*, *Fieb.*—Longer and narrower than the preceding, markings very clear and distinct; pronotum with 7-8 pale lines, broader than the dark ones; markings of the corium divided into three series by two dark longitudinal lines, one near the lateral margin, the other near the claval suture; male with the frontal impression very deeply excavated, extending high up between the eyes, and terminating above in a deeply rounded arch;

anterior tibiæ much swollen, palæ narrow at the base, their greatest width about a third from the apex, intermediate claws longer than the tarsi.

L. 6 mm.

Reigate; Lee, *Douglas and Scott*; Lymington, Barmouth, *Blatch*; Norfolk, *Edwards*; Parkhurst Forest, *Power*; Taff's Well, S. Wales, *Billups*; Tilgate, *Champion*.

C. semistriata, *Fieb.*—Darker and rather shorter than *limitata*, very rastrate; pronotum with 7–8 pale lines; markings of the corium divided into four series by three longitudinal dark lines; facial impression of the male deeply excavated and extended high up between the eyes, not deeply arched above, but terminating in a subtruncate curve; front tibiæ swollen; palæ short, their greatest width near the base.

L. 6 mm.

Lee, Cambridge Fens, *Douglas and Scott*; Norfolk, *Edwards*; Isle of Man, *Blatch*; Devon, *Parfitt*; Forres, *Norman*; Perth, *Reuter*; Moreton, Cheshire Coast, *Ellis*; Armagh, *Johnson*.

C. venusta, *D. & S.*—Exceedingly like *semistriata*, but rather shorter and wider, the anterior tibiæ of the ♂ not swollen, and the facial impression less deep, and more parallel-sided; in the female the palæ are longer and narrower, twice, or more than twice as long as wide; the entire surface is very rastrate, and the pronotum is slightly shorter than in *semistriata* and has seven pale lines.

L. $5\frac{1}{2}$ –6 mm.

Chobham; Carlisle, *Hunter*; Forres, *Norman*; Rothesay, *Douglas*; Orkneys, *Reuter*; Newcastle, Ireland, *Champion*.

C. Fabricii, *Fieb.* (*nigrolineata*, *Fieb.*; *micans*, *D. & S.*; *dubia*, *D. & S.*; *borealis*, *D. & S.*; *perplera*, *D. & S.*; *Whitei*, *D. & S.*; *decora*, *D. & S.*).—This species, which is very variable in colour and markings, may be known from the three preceding by the markings of the corium not being divided into series by longitudinal lines, by the more strongly

marked pronotal tubercle, and the rounded lateral angles; the male may be further known by the narrow and shallow frontal impression, which is not produced between the eyes, but terminated above by a transverse carina; palæ widely cultrate, broadest near the middle; pronotum with about eight pale lines.

L. $5\frac{1}{2}$ –6 mm.

Common and generally distributed.

C. fossarum, *Leach*.—Narrower than *Fabricii*; pronotum with six clear pale lines, its lateral angles obtuse; markings of the corium divided by two dark longitudinal lines, those of the clavus dilated inwardly; male with the facial impression shallow, not carinated but rounded superiorly; palæ truncate at the base, subtriangular; vertex of the head often considerably produced and pointed in the centre.

L. 6 mm.

Generally distributed.

C. Scotti, *Fieb.*—Very like *fossarum*, but smaller, with a shorter pronotum, which has only five pale lines, although sometimes there is also a pale transverse spot in the basal angle; vertex of the head much produced and pointed posteriorly; facial depression in the male scarcely marked except by a sort of horseshoe-shaped punctured fovea; palæ shortly cultrate, widest at the base, which, however, is not so truncate as in *fossarum*.

L. 5 mm.

Morayshire, *Norman*; Shetlands, *Reuter*; Loch near Kirn, Argyleshire, *Douglas and Scott*; Isle of Mull, *Dale*; Strathglass, *B. White*.

C. prominula, *Thoms.*? — Under this name Mr. Douglas has described (*Ent. Mo. Mag.* xii., p. 224) a species which is closely allied to *Scotti*, but larger and more obscure. I have, however, only seen a few specimens, kindly lent to me by Mr. Douglas, in the males of which the form of the palæ and that of the facial impression are

intermediate between *fossarum* and *Scotti*. Under these circumstances I feel that I must leave it as a doubtful species till more specimens turn up.

L. $5\frac{1}{2}$ mm.

Isle of Harris, *Jenner Fust.*

(SUBG. CALLICORIXA, *B. White.*)

C. præusta, *Fieb.* (*socia*, *D. & S.*; *Wollastoni*, *D. & S.*).

—In form, colour and markings resembling *distincta*, but known at once by the large black spot at the apex of the first joint of the posterior tarsi (this is best seen from beneath); in the ♂ the anterior palæ are elongate, suddenly dilated at about half their length from the base, the dilated portion concave, and bent forwards, apex subtruncate; a spot on the tibia, and another on the dilatation of the tarsus, usually black; pronotum with about nine to ten irregular pale lines, its angles obtuse; markings of the corium narrow, not very much broken; intermediate claws slightly shorter than the tarsi. In var. *Wollastoni* the markings are very obscure and ill-defined.

L. 7 mm.

Not rare and generally distributed.

C. sodalis, *D. & S.*—This species, of which I have only seen a male and female kindly lent to me by Mr. Douglas, appears only to differ from *præusta* in the shorter claws of the intermediate tarsi, which in both specimens are only about two-thirds as long as the tarsus. The spot on the hind tarsus is only over the inner apical angle.

L. $6\frac{1}{2}$ mm.

Gosforth, *Bold.*

C. Boldi, *D. & S.*—I have not seen the unique ♀ example of this species, which is distinguished by the central markings of the clavus being longitudinal; the spot on the hind tarsus nearly resembles that of *præusta*. Only one example being known, one cannot avoid a

suspicion that the peculiar markings of the clavus are accidental.

L. $6\frac{1}{2}$ mm.

Gosforth, *Bold*.

C. cognata, *D. & S.*—Another closely allied species, but recognizable by its yellow colour, the seven clear wide pronotal lines, and the broader, clearer and more fragmentary markings of the elytra; ♂ with the palæ less suddenly dilated at the apex; anterior tibiæ not marked with black; posterior tarsi with rather a large triangular spot.

L. $6\frac{1}{2}$ mm.

Strathglass, *B. White*; Loch Grienan, *Rothesay, Douglas*; Loch Leven, *Power*; Shetlands, *Reuter*.

C. concinna, *D. & S.*—A very distinct species, known at once by the smooth corium, rastrate only near the base, the subacute lateral angles of the pronotum, and the guttulate or vermiculate, not transverse, markings of the corium; the pronotum has about nine irregular pale lines; the palæ of the ♂ are simple and cultrate.

L. 7 mm.

Lee, *Douglas*; Gravesend, *Champion*; Hunstanton, *Fowler*; Esher; Norfolk, *Edwards*; Weymouth, *Dale*; Moreton, Cheshire Coast, *Ellis*; Lincolnshire, *J. E. Mason*.

(SUBG. GLÆNOCORISA, *Thoms.*)

C. carinata, *Sahlb. (intricata, D. & S.; Sharpi, D. & S.)*.—About the size and shape of *Falleni*; pronotum with nine to twelve pale lines, pronotal angles obtuse, disc of pronotum with an elongate median carina often traceable down to the base; markings of the clavus and corium very fragmentary and somewhat vermiculate, often very obscure and scarcely traceable, corium shining, rastrate only at the base, clothed with long remote hairs; facial impression of the male large, extending upwards between the eyes; palæ cultrate with a strong lateral curve or bend.

L. 8-9 mm.

Strathglass and Braemar, 3000 ft., *B. White*; Pitlochry, *Norman*; Fifeshire, *Power*; Forres, *Norman*; Shetlands, *Reuter*; Killin, Isle of Harris, *Dale*; Ireland, *Haliday Coll.*; Esher, and Newcastle Ireland, *Champion*.

(SUBG. OREINOCORIXA, *B. White*.)

C. cavifrons, *Thoms. (alpestris, D. & S.)*.—Nearly black; eyes very large and rounded, projecting far beyond the sides of the pronotum, sides of the head behind them produced on each side into a fine spine-like process, face clothed with yellowish hairs, impression concave in the ♂, merely flattened in the ♀; pronotum very rastrate, narrow, and short, its angles subacute, with about seven paler lines, and a distinct central smooth carina; markings of the elytra very obscure and fragmentary, corium scarcely rastrate; palæ of the ♂ subtriangular, with a marginated concave enlargement on the upper margin, anterior femora produced, flattened and roundly dilated beneath, especially in the ♂, intermediate tibiæ and tarsi subequal in length.

L. 8-9 mm.

Ben Chiearan, Strathglass, *F. B. White*.

(SUBG. CYMATIA, *Flor.*)

C. Bonsdorffii, *Sahlb.*.—Brown, not rastrate, elytra with fragmentary pale transverse markings. Head much wider than the pronotum, vertex produced in front between the eyes, longer than the pronotum, eyes remote from the posterior margin which is raised, face excavated ♂, or impressed ♀, clothed with white hairs; pronotum without transverse lines, angles obtuse, side and basal margins slightly raised; disc with a well-marked tubercle in front; elytra with the membrane distinct; anterior palæ elongate, nearly straight,

with very long ciliæ, intermediate tarsi slightly shorter than the tibiæ.

L. 6 mm.

Woking, *Champion*; Norfolk, *Edwards*; Forres, *Norman*; Isle of Harris, *Dale*; Strathglass, *F. B. White*.

C. coleoptrata, *Fab.*—Much smaller than the preceding, but like it in general characters; elytra without transverse markings. Head very large, three times as long as the pronotum, which is many times wider than long; disc of the latter with a small anterior tubercle; elytra with the lateral sulcus very wide, corium with two dark longitudinal stripes, membrane not distinct.

L. 3 mm.

Whitstable, *Champion*; Old Trent, Burton-on-Trent, Repton, *Fowler*; Winchelsea, Isle of Wight, *Blatch*; Lincolnshire, *J. E. Mason*; "abundant at Folkestone," *C. G. Hall*; Slapton Lea, Matlock, Horning; Cambridge Fens, *Douglas and Scott*.

SIGARA, *Fab.*

Like a small short *Corixa*, but antennæ three-jointed, face not excavated in either sex, and scutellum present, mesosternum without parapleuræ.

- (2) 1. Pronotum nearly as long as the vertex of the head MINUTISSIMA.
(1) 2. Pronotum much shorter than the vertex SCHOLTZII.

S. minutissima, *Linn.*—Head pale, with a slightly darker dorsal line down the vertex, which is rounded in front, and shorter than its width between the eyes; pronotum dull, greyish brown, its margins paler, about as long as the vertex, base rounded; elytra dull, pale greyish testaceous, with the base of the clavus, corium, and a band across the latter, beyond the middle, and the membrane darker; legs pale whitish.

L. 2 mm.

Chobham, Cambridge, *Billups*; Burton, *Fowler*; Norfolk,

Edwards ; Devon, *Parfitt* ; Pett Ditches, near Hastings, *Collett* ; Knowle, Bewdley, Ludlow, Dorchester, *Blatch* ; Ireland, *Haliday Coll.* ; Scarborough, *Lawson* ; Loch Achilty, streams at Braemar, Tay near Perth, *F. B. White*.

S. Scholtzii, *Fieb.*—Differs from the above by the longer vertex, which is longer than its width between the eyes, and more angulated in front, and nearly twice as long as the very short pronotum, it is also a paler and much more shining insect, and the spots of the elytra are smaller and more numerous.

L. $2-2\frac{1}{4}$ mm.

Chobham ; Guestling, near Hastings, *Butler* ; Lincoln, *Fowler* ; Norfolk, *Edwards* ; Littlehampton and Weston-super-Mare, *Billups*.

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ADDENDA AND CORRIGENDA.

pp. 43, 48, and Expl. pl., for *Pseudophlæus*, read *Pseudophlæus*.

p. 58, for *Hypericum perfoliatum*, read *perforatum*.

p. 63, under *Berytus crassipes*, for "one species," read "one specimen."

p. 110, table of species, for *punctatus*, read *grandis*.

p. 127, add as synonym to *Orthostira parvula*, *Fall.*, *obscura* H. Schff. D. & S. & C.

p. 210, line 12 from top, in some copies add ♀ at commencement of paragraph.

p. 238, for *Deræocoris*, D. & T., read D. & S.

p. 260, add as synonym of *Capsus laniarius*, *capillaris*, *Fab.*

Illustrated Edition, Pl. VI., fig. 4. The clubs of femora and antennæ should be black.

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PLATE I.

- FIG. 1. *Odontoscelis fuliginosa*, *Lin.*
2. *Corimelana scarabæoides*, *Lin.*
3. *Eurygaster maura*, *Lin.*
4. „ *nigra*, *Fab.*
5. *Podops inuncta*, *Fab.*
6. *Geotomus punctulatus*, *Cost.*
7. *Schirus bicolor*, *Lin.*
8. „ *dubius*, *Scop.*
9. „ *biguttatus*, *Lin.*
10. „ *morio*, *Lin.*

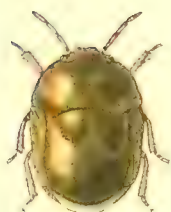


PLATE II.

- FIG. 1. *Gnatho conus picipes*, *Fall.*
2. *Sciocoris cursitans*, *Fab.*
3. *Elia acuminata*, *Lin.*
4. *Neottiglossa inflexa*, *Wolff.*
5. *Eysarcoris melanocephalus*, *Fab.*
6. „ *æneus*, *Scop.*
7. *Peribalus vernalis*, *Wolff.*
8. *Pentatoma fuscispina*, *Boh.*
9. „ *baccarum*, *Lin.*
10. „ *juniperina*, *Lin.*

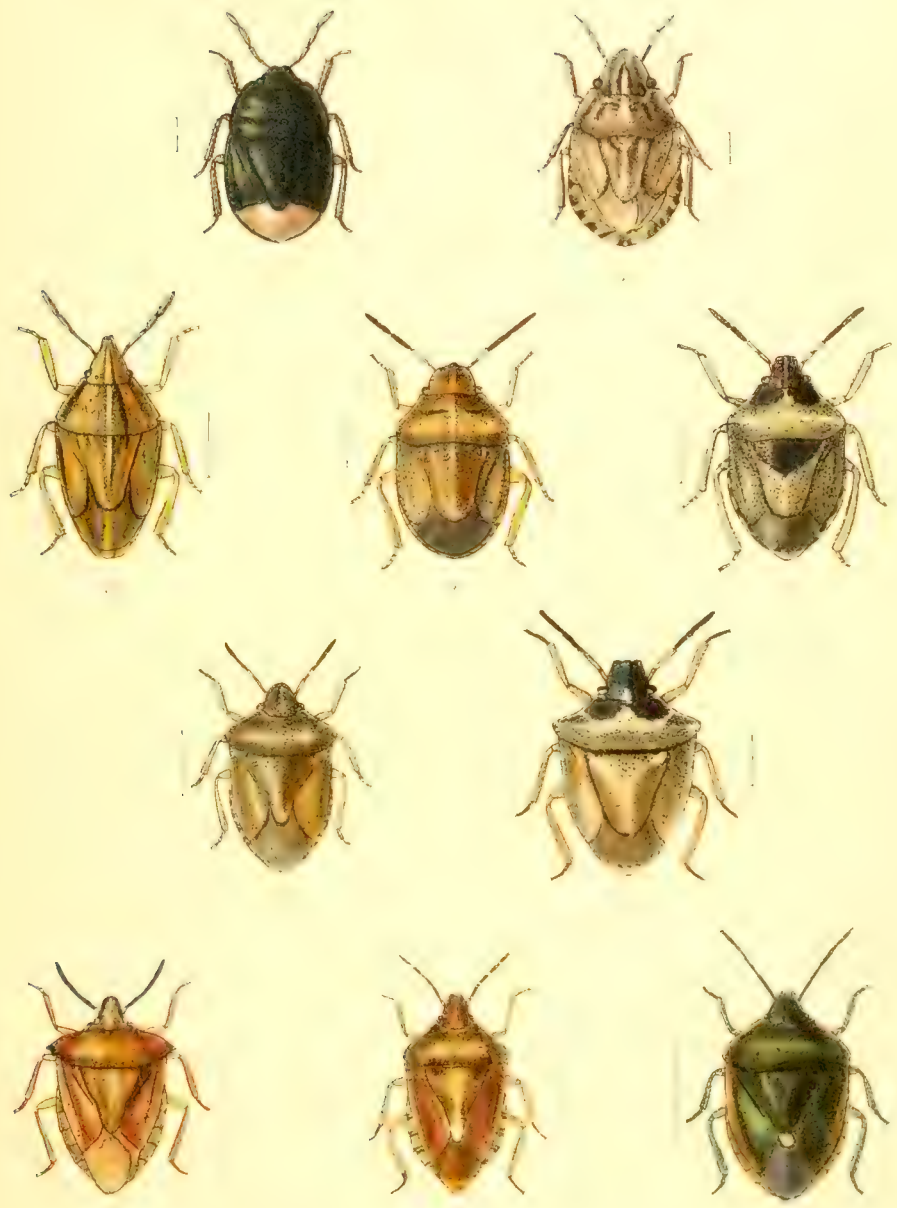


PLATE III.

- FIG. 1. *Pentatoma prasina*, *Lin.*
2. *Strachia festiva*, *Lin.*
3. „ *oleracea*, *Lin.*
4. *Piezodorus lituratus*, *Fab.*
5. *Tropicoris rufipes*, *Lin.*
6. *Pieromerus bidens*, *Lin.*
7. *Podisus luridus*, *Fab.*
8. *Asopus punctatus*, *Lin.*
9. *Jalla dumosa*, *Lin.*
10. *Zierona cœrulea*, *Lin.*



1. *Pygmaeus*

2. *Pygmaeus*

3. *Pygmaeus*

PLATE IV.

- FIG. 1. *Acanthosoma hæmorrhoidale*, *Lin.*
2. „ *dentatum*, *De Gl.*
3. „ *interstinctum*, *Lin.*
4. „ *tristriatum*, *Lin.*
5. *Spathocera Dalmanni*, *Schil.*
6. *Enoplops scapha*, *Fab.*
7. *Syromastes marginatus*, *Lin.*
8. *Verlusia rhombea*, *Lin.*
9. *Gonocerus venator*, *Fab.*
10. *Pseudophleus Fallenii*, *Schil.*



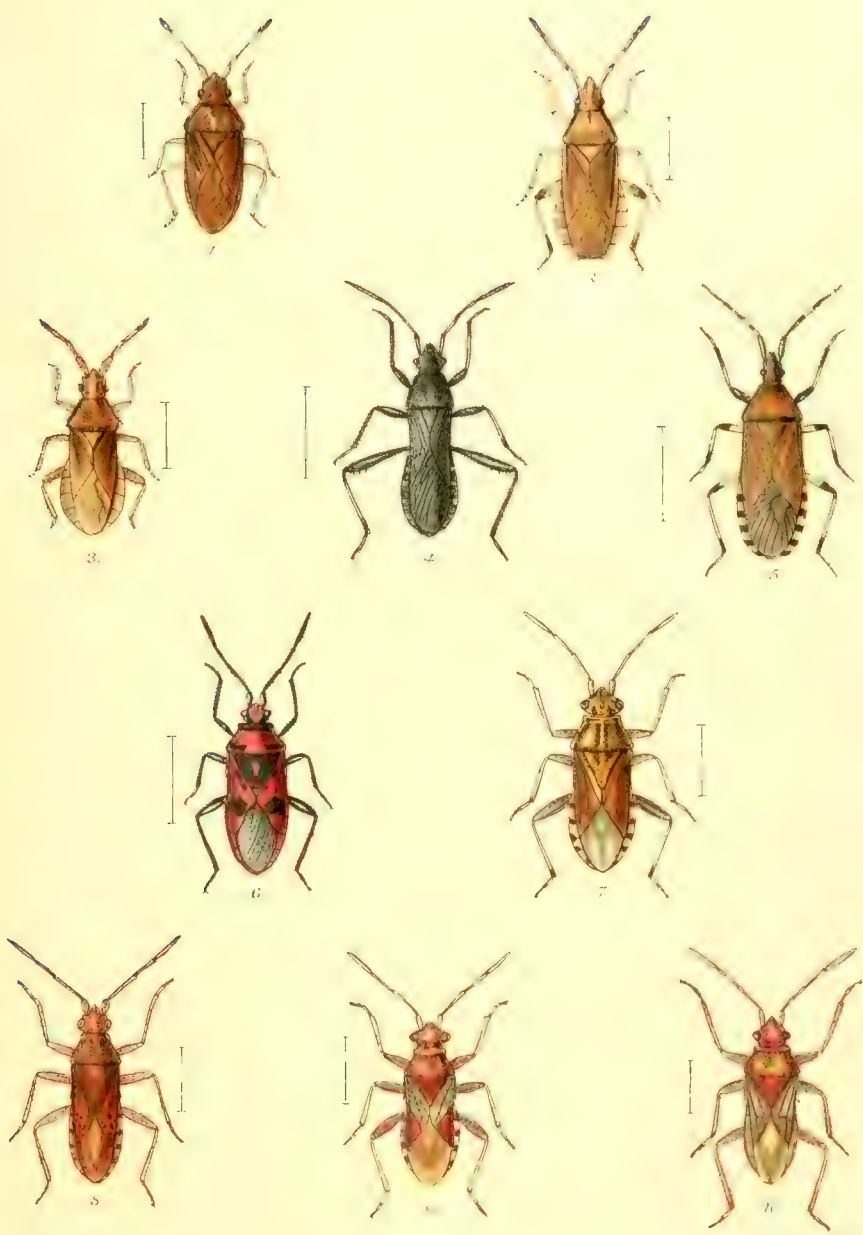
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PLATE V.

- FIG. 1. *Bathysolen nubilus*, *Fall.*
2. *Ceraleptus lividus*, *Stein.*
3. *Coreus denticulatus*, *Scop.*
4. *Alydus calcaratus*, *Linn.*
5. *Stenocephalus agilis*, *Scop.*
6. *Therapha hyoseyami*, *Linn.*
7. *Corizus crassicornis*, *Linn.*
8. „ *maculatus*, *Fieb.*
9. „ *capitatus*, *Fab.*
10. „ *parumpunctatus*, *Schill.*



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PLATE VI.

- FIG. 1. *Myrmus miriformis* brachypterous, *Fall.*
1a. „ „ ♀ with developed elytra.
2. *Chorosoma Schillingi*, *Schml.*
3. *Neides tipularius*, *Linn.*
4. *Berytus crassipes*, *H. Schf.*
5. „ *clavipes*, *Fab.*
6. *Metatropis rufescens*, *H. Schf.*
7. *Metacanthus punctipes*, *Germ.*
8. *Lygæus equestris*, *Linn.*
9. *Nysius ericæ*, *Schill.*
10. *Cymus glandicolor*, *Hahn.*

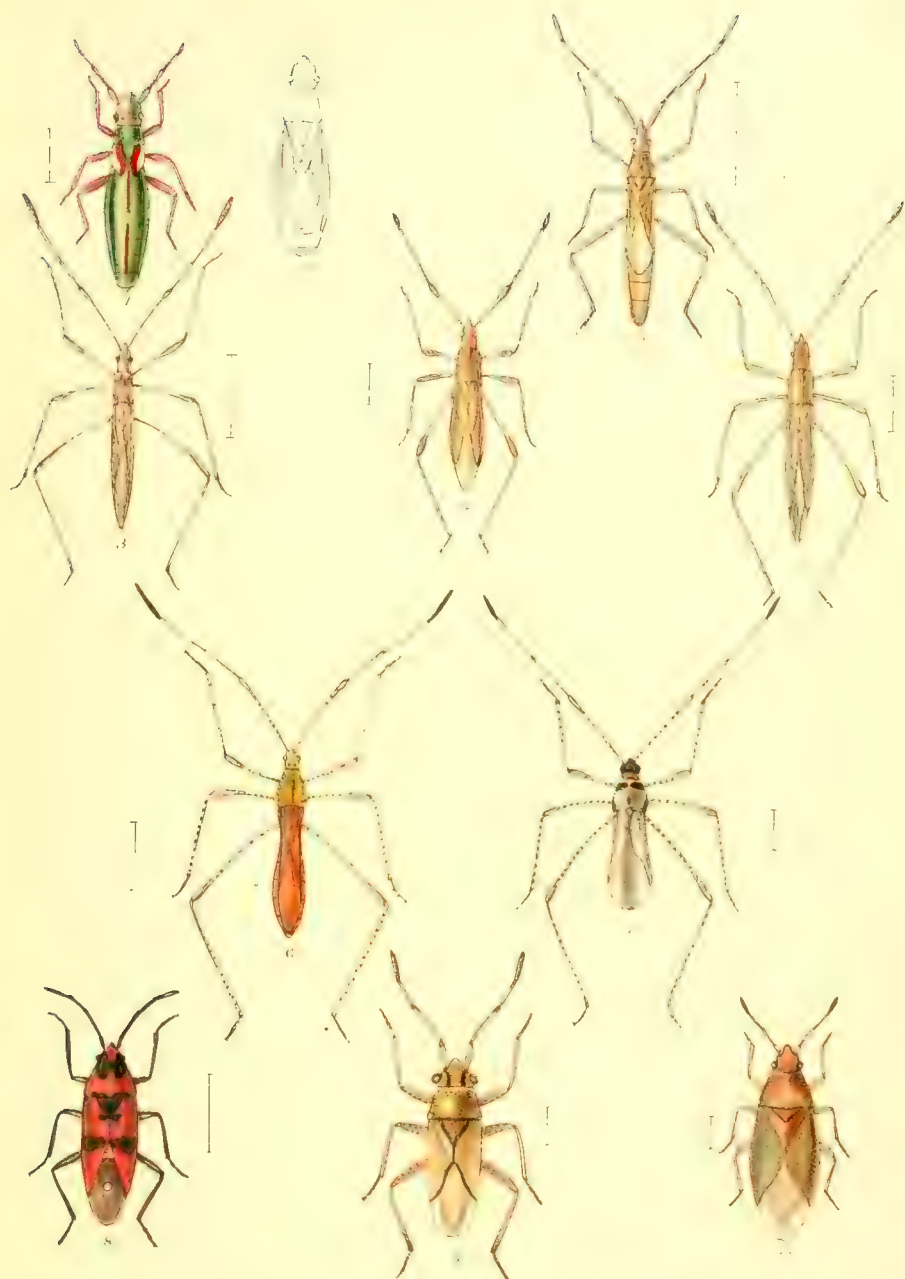


PLATE VII.

1. *Ischnorhynchus resedæ*, *Panz.*
2. *Ischnodemus sabuleti*, *Fall.*
3. *Henestaris laticeps*, *Curt.*
4. „ *halophilus*, *Burm.*
5. *Chilacis typhæ*, *Perr.*
6. *Heterogaster artemisiæ*, *Schill.*
7. *Plociomerus fracticollis*, *Schill.*
8. „ *luridus*, *Hahn.*
9. *Rhyparochromus antennatus*, *Schill.*
10. „ *prætextatus*, *H. Schf.*

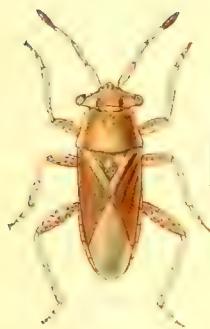
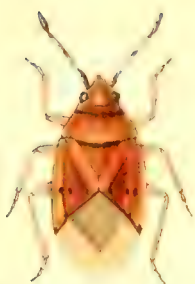


PLATE VIII.

- FIG. 1. *Rhyparochromus chiragra*, *Fab.*
2. *Tropistethus holosericeus*, *Schltz.*
3. *Isehnocoris angustulus*, *Boh.*
4. *Macrodema micropterum*, *Curt.*
5. *Pionosomus varius*, *Wolff.*
6. *Plinthisus brevipennis*, *Latr.*
7. *Lasiosomus enervis*, *H. Schf.*
8. *Acompus rutipes*, *Wolff.*
9. *Stygnus arenarius*, *Hahn.*
10. *Peritrechus geniculatus*, *Hahn.*
10a. „ lateral view.

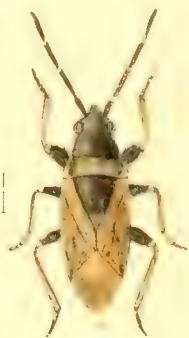
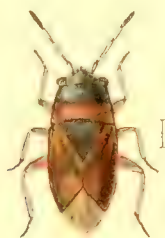


PLATE IX.

- FIG. 1. *Peritrechus nubilus*, *Fall.*
2. *Trapezonotus distinguendus*, *Flor.*
3. „ *Ulrichii*, *Fieb.*
4. *Aphanus Rolandri*, *Linn.*
5. „ *lynceus*, *Fab.*
6. „ *pini*, *Linn.*
7. „ *quadratus*, *Fab.*
8. „ *pedestris*, *Panz.*
9. *Emblethis verbasci*, *H. Schf.*
10. *Beosus luscus*, *Fab.*

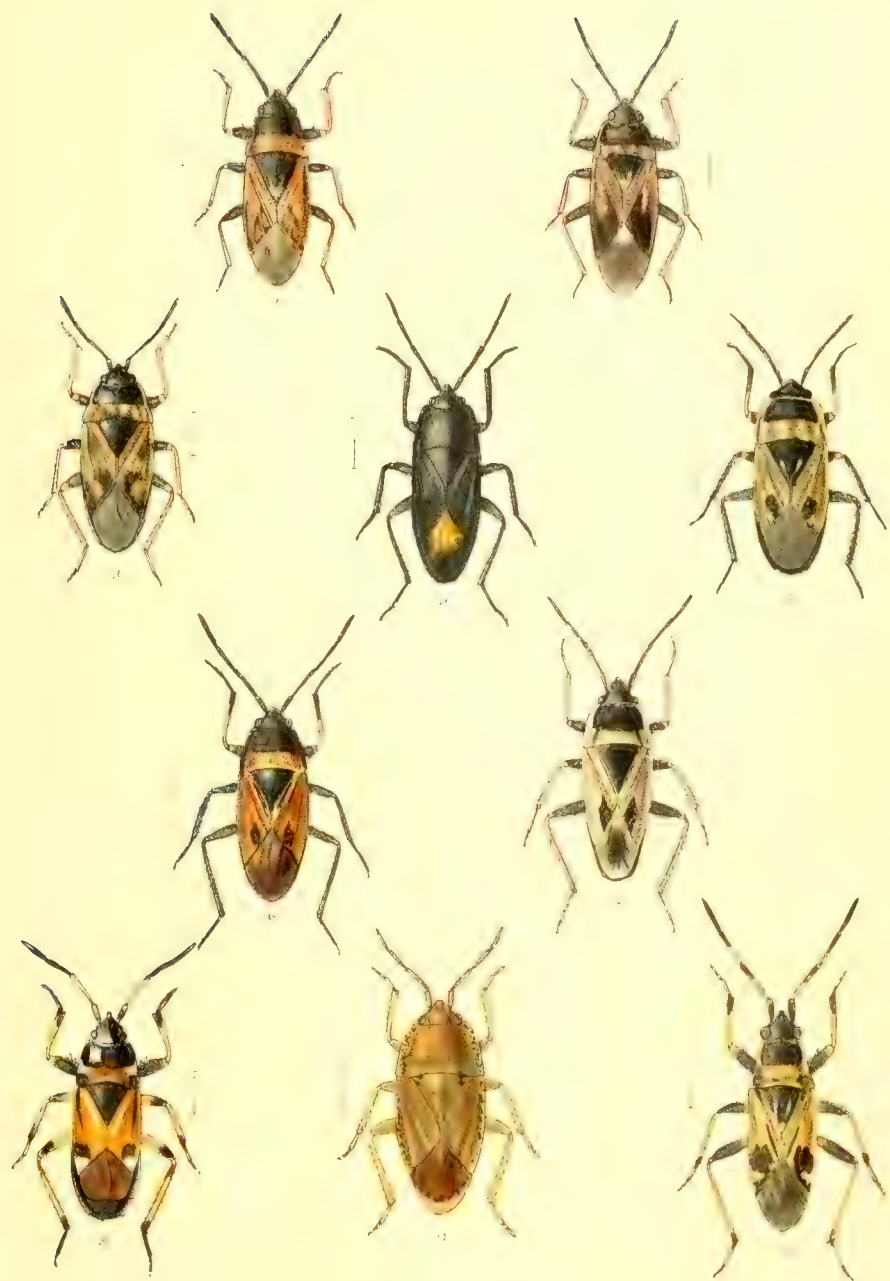


PLATE X.

- FIG. 1. *Eremocoris fenestratus*, *H. Schf.*
2. ,, *podagricus*, *Fab.*
3. *Scolopostethus pictus*, *Schill.*
4. ,, *decoratus*, *Hahn.*
5. *Notochilus contractus*, *H. Schf.*
6. *Dryinus brunneus*, *Sahlb.*
7. ,, *pilipes*, *Fieb.*
8. ,, *pilicornis*, *M. & R.*
9. ,, *piceus*, *Flor.*
10. *Gastrodes ferrugineus*, *Linn.*



PLATE XI.

- FIG. 1. *Gastrodes abietis*, *Linn.*
2. *Pyrrhocoris apterus*, *Linn.*
3. *Piesma quadrata*, *Fieb.*
4. „ *capitata*, *Wolff.*
5. *Serenthia læta*, *Fall.*
6. *Campylostira verna*, *Fall.*
7. *Orthostira brunnea*, *Germ.*
8. „ *cervina*, *Germ.*
9. „ *nigrina*, *Fall.*
10. „ *parvula* (developed), *Fall.*
10. „ „ (undeveloped).

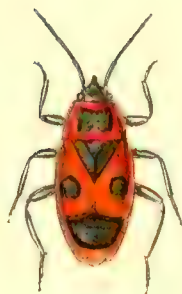


PLATE XII.

- FIG. 1. *Dictyonota crassi cornis*, *Fall.*
2. „ *strichnocera*, *Fieb.* ♀
3. „ *fuliginosa*, *Costa.*
4. *Derephysia foliacea*, *Fall.*
5. *Monanthia ampliata*, *Fieb.*
6. „ *angustata*, *H. Schf.*
7. „ *ciliata*, *Fieb.*
8. „ *costata*, *Fab.*
9. „ *+ maculata*, *Wolff.*
10. „ *simplex*, *H. Schf.*

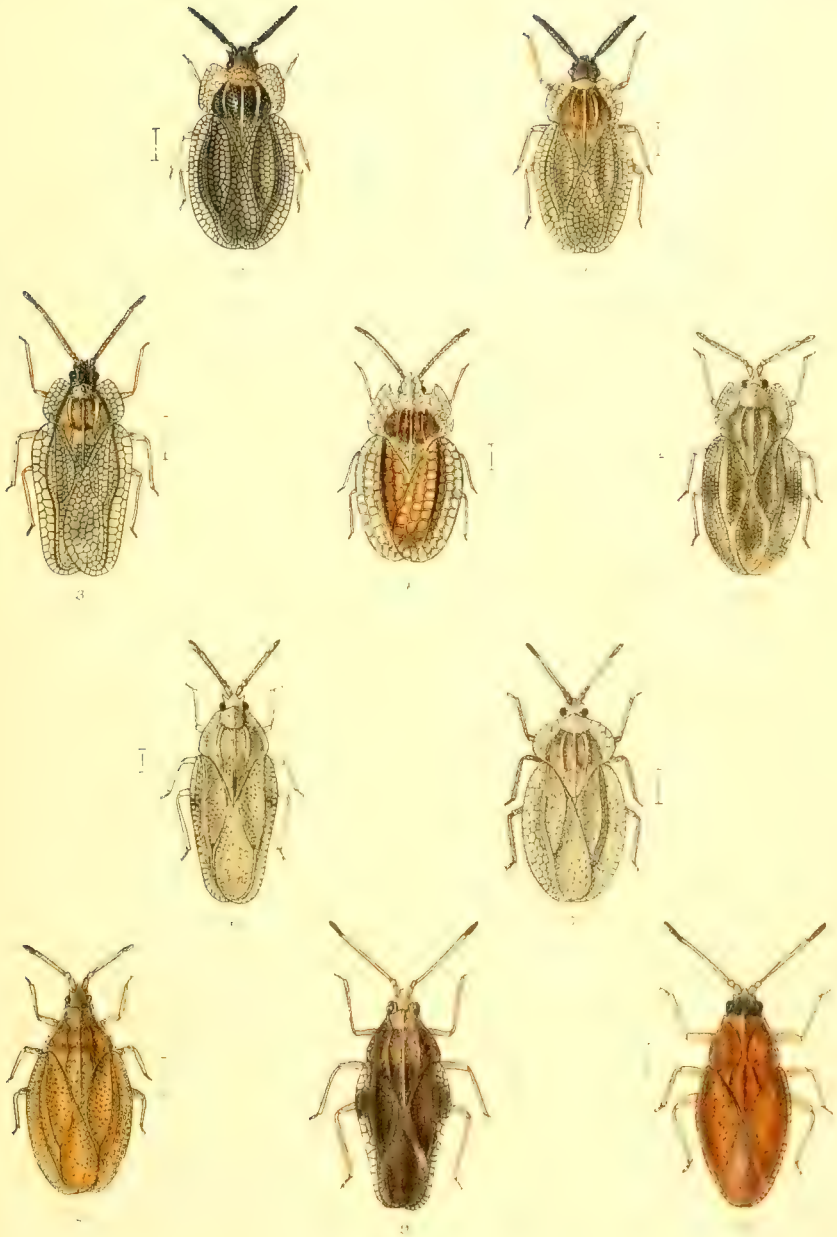
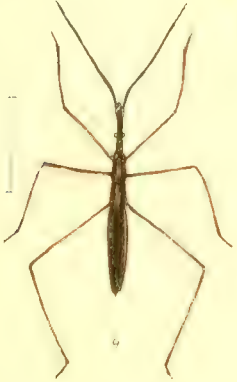
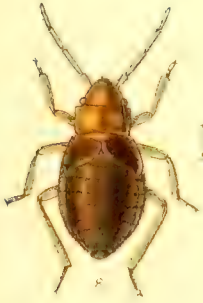


PLATE XIII.

- FIG. 1. *Monanthia humuli*, *Fab.*
2. *Aneurus lævis*, *Fab.*
3. *Aradus depressus*, *Fab.*
4. „ *corticalis*, *Linn.*
5. „ *Lawsoni*, *Saund.*
6. *Hebrus pusillus*, *Fall.*
7. *Mesovelia furcata*, *M. & R.*
8. *Æpophilus Bonnairei*, *Sign.*
9. *Hydrometra stagnorum*, *Linn.*
10. *Microvelia pygmæa*, *Duf.*



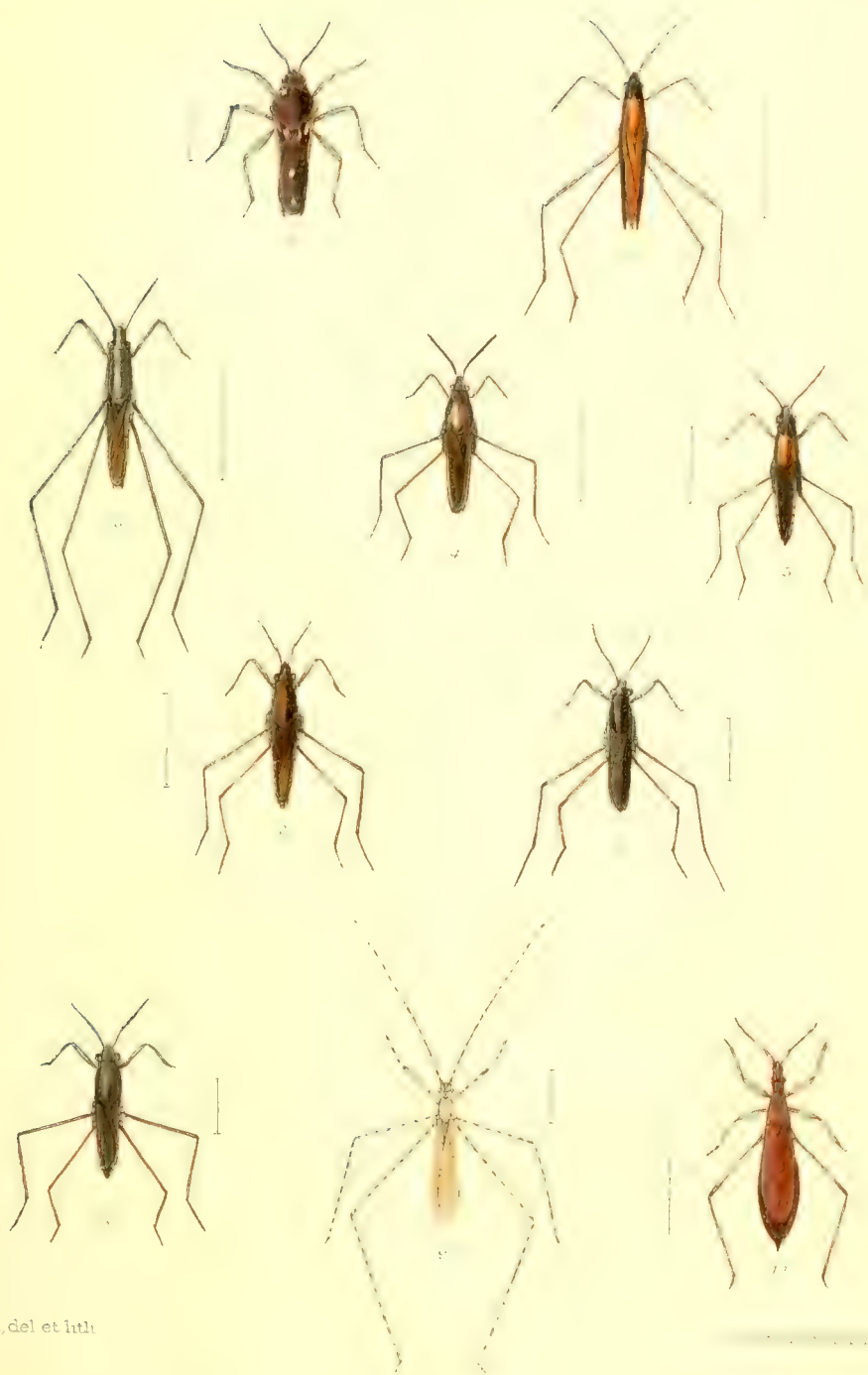
Staphylinus

Staphylinus

Staphylinus

PLATE XIV.

- FIG. 1. *Velia currens*, *Fab.*
2. *Gerris rufoscutellata*, *Latr.*
3. „ *paludum*, *Fab.*
4. „ *Costæ*, *H.S.*
5. „ *aspera*, *Fieb.*
6. „ *gibbifera*, *Schum.*
7. „ *lacustris*, *Linn.*
8. „ *argentata*, *Schum.*
9. *Ploiaria vagabunda*, *Linn.*
10. *Pygolampis bidentata*, *Fourc.*



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PLATE XV.

- FIG. 1. *Reduvius personatus*, *Linn.*
2. *Coranus sub-apterus*, *De G.*
3. *Prostemma guttula*, *Fab.*
4. *Nabis brevipennis*, *Hahn.*
5. „ *lativentris* (macropterus), *Bol.*
6. „ *major*, *Cost.*
7. „ *boops*, *Schivöde.*
8. „ *flavomarginatus* (macropterus), *Scholtz.*
9. „ *limbatus*, *Dahlb.*
10. „ *lineatus*, *Dahlb.*



PLATE XVI.

FIG. 1. *Nabis ferus*, *Linn.*

2. „ *rugosus*, *Linn.*

— 3. *Salda pilosa*, *Fall.*

— 4. „ *lateralis* (macropterous), *Fall.*

4a. „ „ (brachypterous).

5. „ *riparia*, *Fall.*

— 6. „ *scotica*, *Curt.*

— 7. „ *morio*, *Zett.*

— 8. „ *littoralis*, *Linn.*

9. „ *C. album*, *Fieb.*

10. „ *marginalis*, *Fall.*

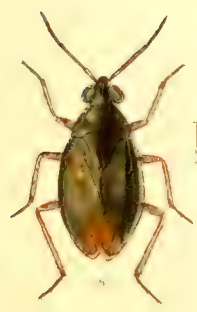
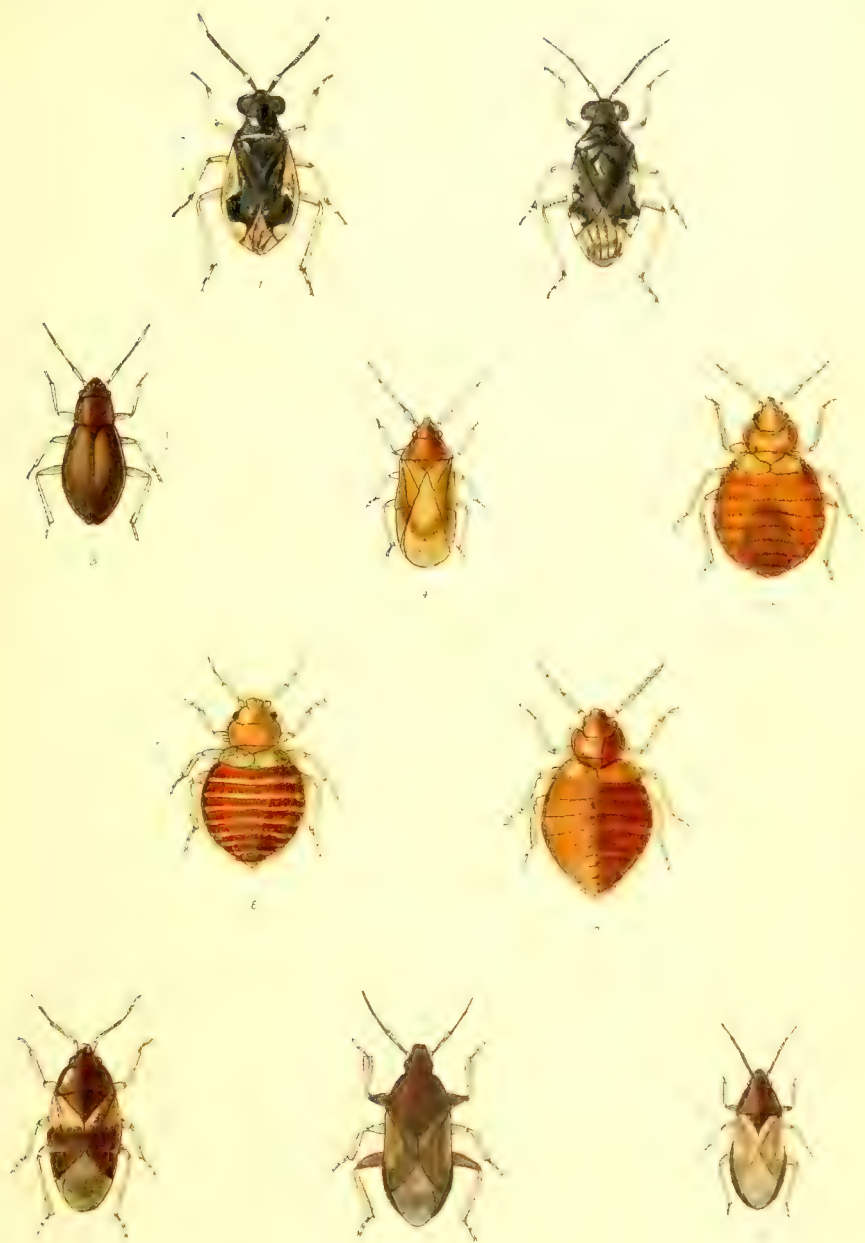


PLATE XVII.

- FIG. 1. *Salda elegantula*, *Full.*
2. „ *cincta*, *H.S.*
3. *Ceratocombus coleoptratus*, *Zett.*
4. *Cryptostemma alienum*, *H.S.*
5. *Cimex lectularius*, *Lin.*
6. „ *hirundinis*, *Jen.*
7. „ *pipistrelli*, *Jen.*
8. *Lycocoris campestris*, *Full.*
9. *Piezostethus galactinus*, *Fieb.*
10. „ *formicetorum*, *Boh.*



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PLATE XVIII.

- FIG. 1. *Temnostethus pusillus*, *H.S.*
2. *Elatophilus nigricornis*, *Zett.*
3. *Anthocoris nemoralis*, *Fab.*
4. „ *gallarum-ulmi*, *De Geer.*
5. „ *visci*, *Dougl.*
6. „ *sylvestris*, *Linn.*
7. *Tetraphleps vittata*, *Fieb.*
8. *Acompocoris alpinus*, *Reut.*
9. *Triphleps nigra*, *Wolff*, ♂.
10. „ *majuscula*, *Reut.*



PLATE XIX.

- FIG. 1. *Brachysteles parvicornis*, *Cost.*
2. *Cardiastethus fasciiventris*, *Garb.*
3. *Xylocoris ater*, *Duf.*
4. *Myerophysa pselaphiformis*, *Curt.*, ♂.
5. ,, ,, ♀.
6. ,, *elegantula*, *Baer.*, ♂.
7. ,, ,, ♀.
8. *Myrmedobia tenella*, *Zett.*, ♂.
9. ,, *coleoptrata*, *Fall.*, ♂.
10. ,, ,, ♀.



PLATE XX.

- Fig. 1. *Pithanus Maerkeli*, *H.S.*
2. *Acetropis Gimmerthalii*, *Flor.*, ? .
3. *Miris kavigatus*, *Linn.*
4. „ *holsatus*, *Fab.*
5. *Megalocera erratica*, *Linn.*
6. „ *longicornis*, *Fall.*
7. *Teratocoris antennatus*, *Boh.*
8. „ *Saundersi*, *D. & S.*
9. *Leptopterna ferrugata*, *Fall.*
10. „ *dolabrata*, *Linn.*



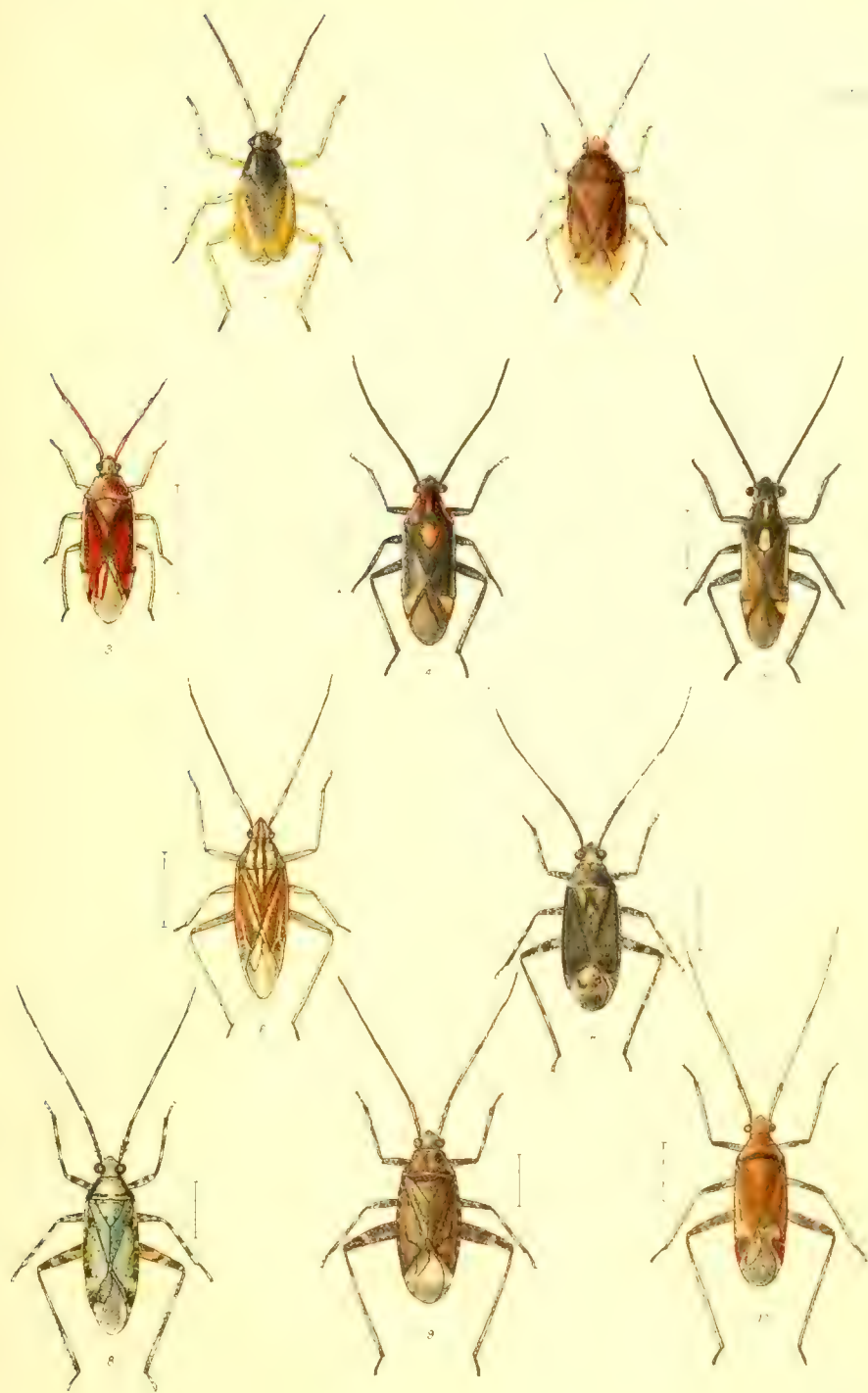
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PLATE XXI.

- FIG. 1. *Bryocoris pteridis*, *Fall.*
2. *Monalocoris filicis*, *Linn.*
3. *Pantilius tunicatus*, *Fab.*
4. *Lopus flavomarginatus*, *Don.*
5. „ *sulcatus*, *Fieb.*
6. *Miriduis quadrivirgatus*, *Costa.*
7. *Phytocoris populi*, *Linn.*
 var. distinctus, *D. & S.*
8. „ *tiliæ*, *Fab.*
9. „ *pini*, *Kbm.*
10. „ *ulmi*, *Linn.*



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PLATE XXII.

- FIG. 1. *Calocoris striatellus*, *Fab.*
2. ,, *sexguttatus*, *Fab.*
3. ,, *ticinensis*, *Mey.*
4. ,, *seticornis*, *Fab.*
5. ,, *infusus*, *H. Schf.*
6. ,, *striatus*, *Linn.*
7. *Oncognathus binotatus*, *Fab.*
8. *Dichrooscytus rufipennis*, *Fall.*
9. *Plesiocoris rugicollis*, *Fall.*
10. *Lygus pratensis*, *Fab.*



PLATE XXIII.

- FIG. 1. *Lygus atomarius*, *Mey.*
2. „ *viridis*, *Fall.*
3. „ *limbatus*, *Fall.*
4. „ *Spinolæ*, *Mey.*
5. „ *pabulinus*, *Linn.*
6. „ *viscicola*, *Put.*
7. „ *Kalmii*, *Linn.*
8. *Zygimus pinastri*, *Fall.*
9. *Pœiloseytus nigrinus*, *Fall.*
10. „ *unifasciatus*, *Fab.*



PLATE XXIV.

- FIG. 1. *Camptebrochis lutescens*, *Schill.*
2. *Liocoris tripustulatus*, *Fab.*
3. *Capsus scutellaris*, *Fab.*, ♀.
4. *Bothynotus pilosus*, *Boh.*, ♀.
5. *Rhopalotomus ater*, *Linn.*
6. *Pilophorus clavatus*, *Linn.*
7. „ *cinnamopterus*, *Kbm.*
8. *Systellonotus triguttatus*, *Linn.*
9. *Allodapus rufescens*, *Burm.*
10. *Halticus luteicollis*, *Panz.*



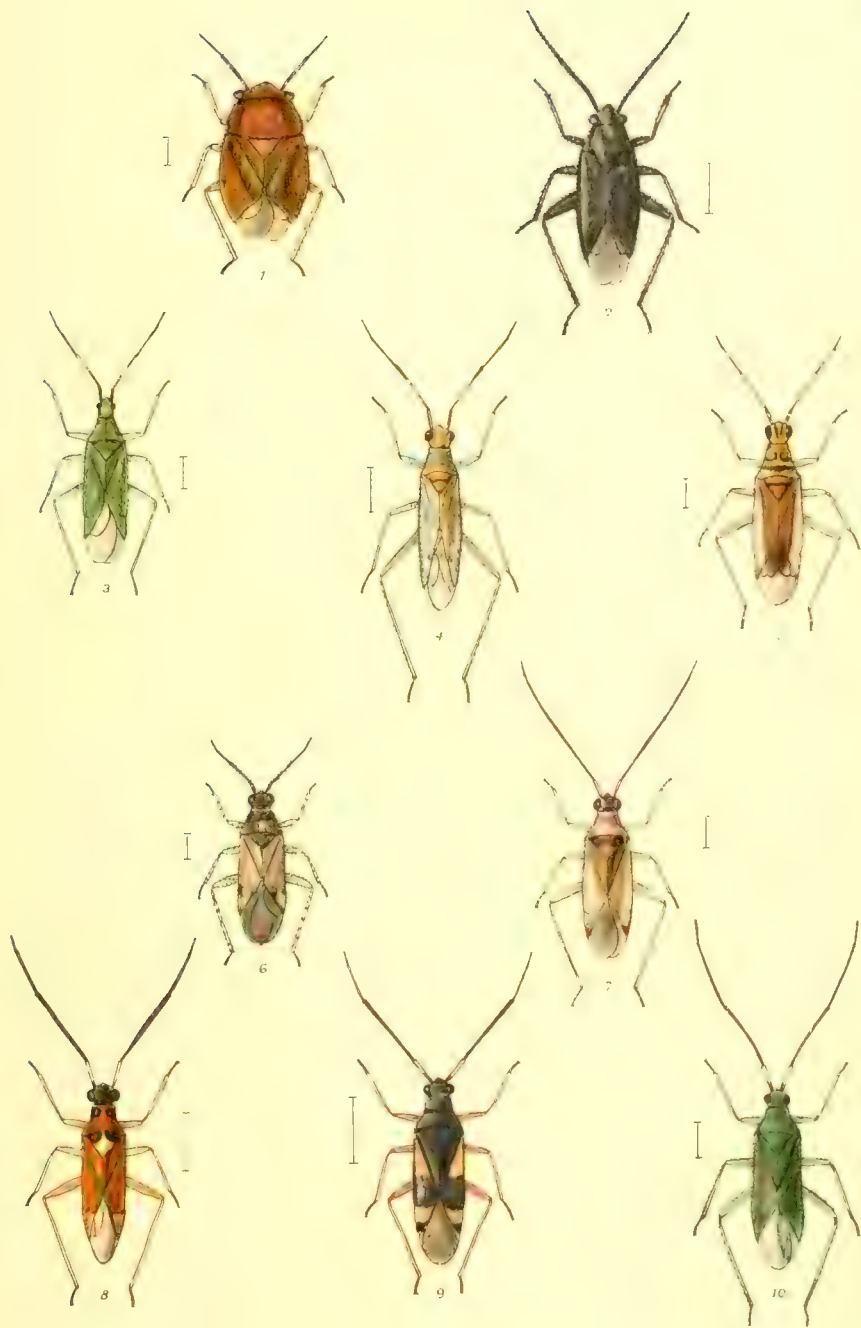
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PLATE XXV.

FIG. 1. *Strongylocoris luridus*, *Full.*

2. *Orthocephalus saltator*, *Hahn.*, ♀, developed.
3. *Macrolophus nubilus*, *H.S.*
4. *Dicyphus epilobii*, *Reut.*
5. „ *pallidicornis*, *Fieb.*
6. „ *annulatus*, *Wolff.*
7. *Campyloneura virgula*, *H.S.*
8. *Cyllocoris histrionicus*, *Linna.*
9. „ *flavonotatus*, *Boh.*
10. *Aetorhinus angulatus*, *Fab.*



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PLATE XXVI.

- FIG. 1. *Globiceps flavomaculatus*, *Fab.*
 2. ,, *dispar*, *Boh.*, ♀.
 3. *Mecomma ambulans*, *Fall.*, ♂.
 4. ,, ,, ,, ♀.
 5. *Cyrtorrhinus caricis*, *Fall.*
 6. ,, *pygmæus*, *Zett.*
 7. *Orthotylus bilineatus*, *Fall.*
 8. ,, *flavinervis*, *Kb.*
 9. ,, *nassatus*, *Fab.*
 10. ,, *viridinervis*, *Kb.*
 11. *a.* ,, *prasinus*, *Fall.*, right forceps.
 11. *b.* ,, ,, ,, left ,,
 12. *a.* ,, *Scotti*, *Reut.*, ,, ,,
 12. *b.* ,, ,, ,, right ,,
 13. *a.* ,, *ochrotrichus*, *D. & S.*, ,, ,,
 13. *b.* ,, ,, ,, left ,,

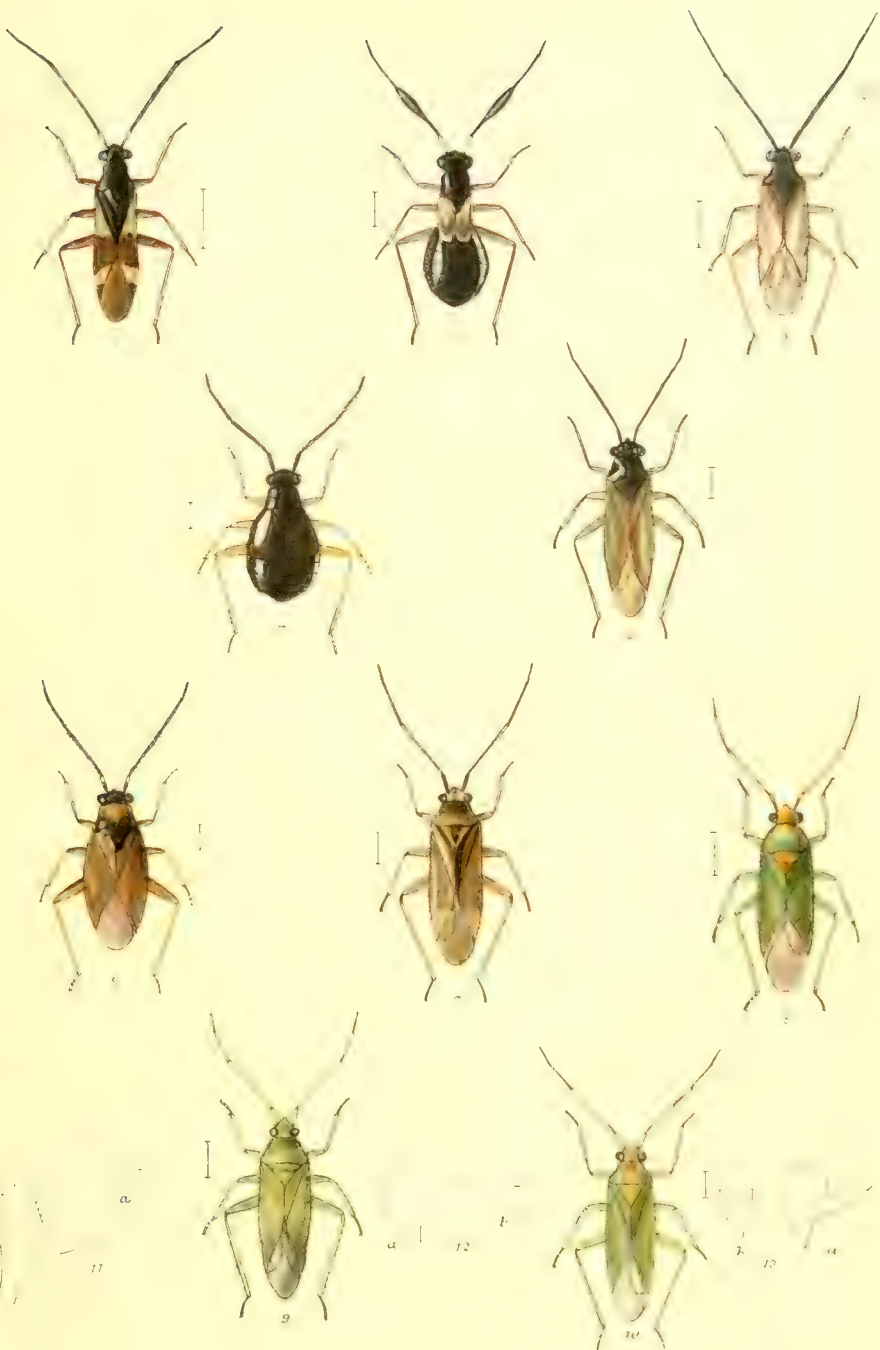


PLATE XXVII.

- FIG. 1. *Orthotylus flavosparsus*, *Sahlb.*
2. „ *adenocarpî*, *Perr.*
3. „ *rubidus*, *Fieb. & Put.*
4. „ *ericetorum*, *Fall.*
5. *Hypsitylus bicolor*, *D. & S.*
6. *Loxops coccinea*, *Mey.*
7. *Heterotoma merioptera*, *Scop.*
8. *Heterocordylus genistæ*, *Scop.*
9. *Malococoris chlorizans*, *Fall.*
10. *Onychumenus decolor*, *Fall.*



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PLATE XXVIII.

- FIG. 1. *Oncotylus viridiflavus*, *Goeze*.
2. *Macrotylus solitarius*, *Mey*.
3. *Conostethus salinus*, *Sahlb*.
4. *Hoplomachus Thunbergi*, *Fall*.
5. *Macrocoleus hortulanus*, *Mey*.
6. „ *tanaceti*, *Fall*.
7. *Amblytylus delicatus*, *Perr*.
8. „ *brevicollis*, *Fieb*.
9. *Harpocera thoracica*, *Fall*.
10. *Byrsoptera rufifrons*, *Fall*.

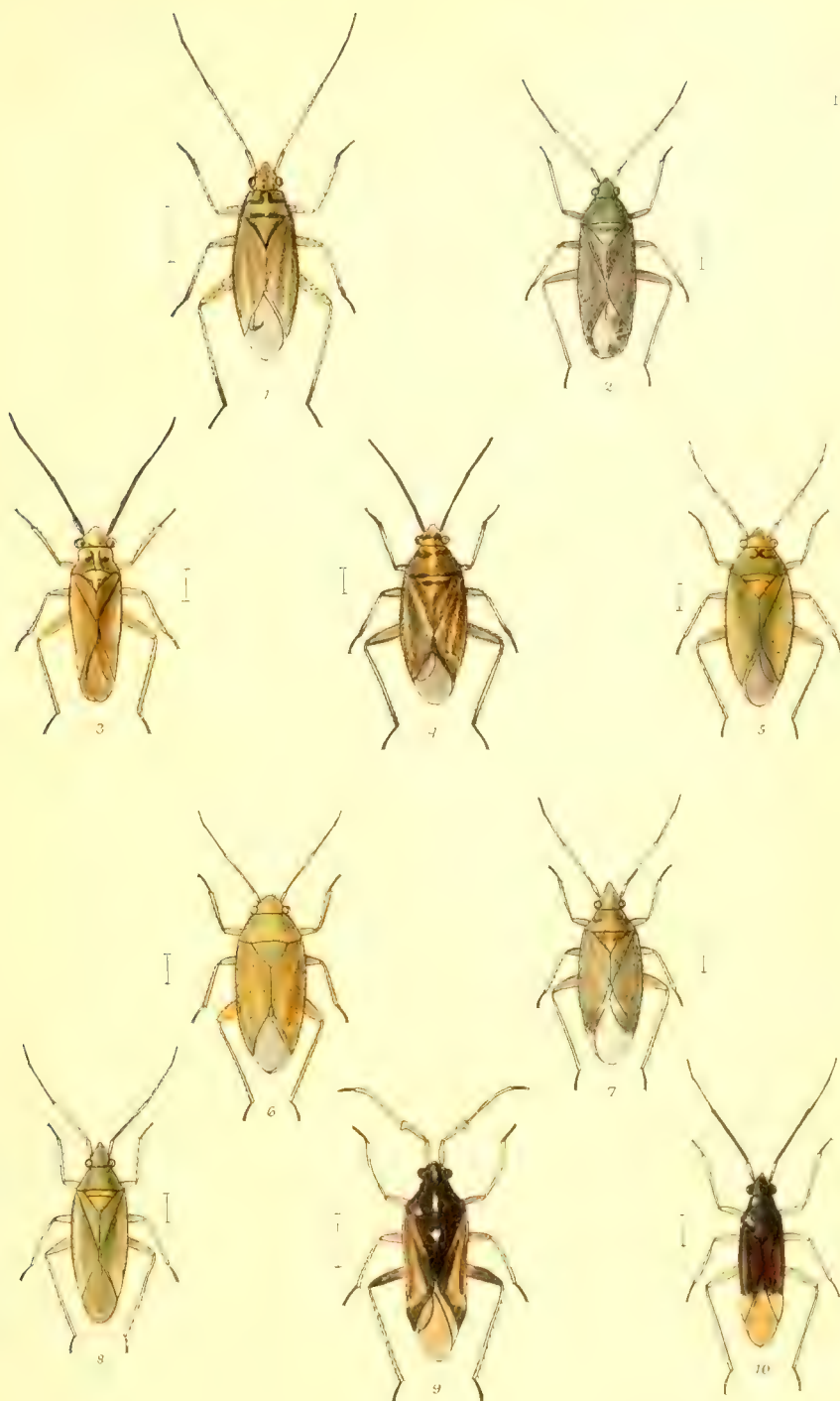


PLATE XXIX.

- FIG. 1. *Phylus palliceps*, *Fieb.*
2. ,, *coryli*, *Linn.*
3. *Plesiodema pinetellum*, *Zett.*, ♀.
4. *Atractotomus mali*, *Mey.*, ♀.
5. *Psallus betuleti*, *Fall.*, ♀.
6. ,, *variabilis*, *Fall.*, ♀.
7. ,, *quercûs*, *Kbm.*
8. ,, *alnicola*, *D. & S.*
9. ,, *varians*, *H. Schf.*
10. ,, *sanguineus*, *Fab.*

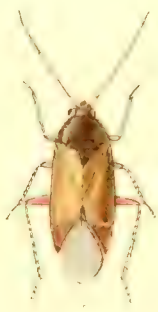


PLATE XXX.

- FIG. 1. *Psallus Rotermundi*, *Schltz.*
2. *Plagiognathus albipennis*, *Fall.*
3. „ *arbustorum*, *Fab.*
4. „ *Roseri*, *H. Schf.*
5. „ *Bohemanni*, *Fall.*
6. „ *saltitans*, *Fall.*
7. *Asciodema Fieberi*, *D. & S.*
8. *Naucoris cimicoides*, *Linn.*
9. *Aphelochirus æstivalis*, *Fab.*
10. *Nepa cinerea*, *Linn.*

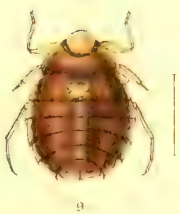
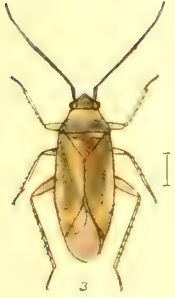
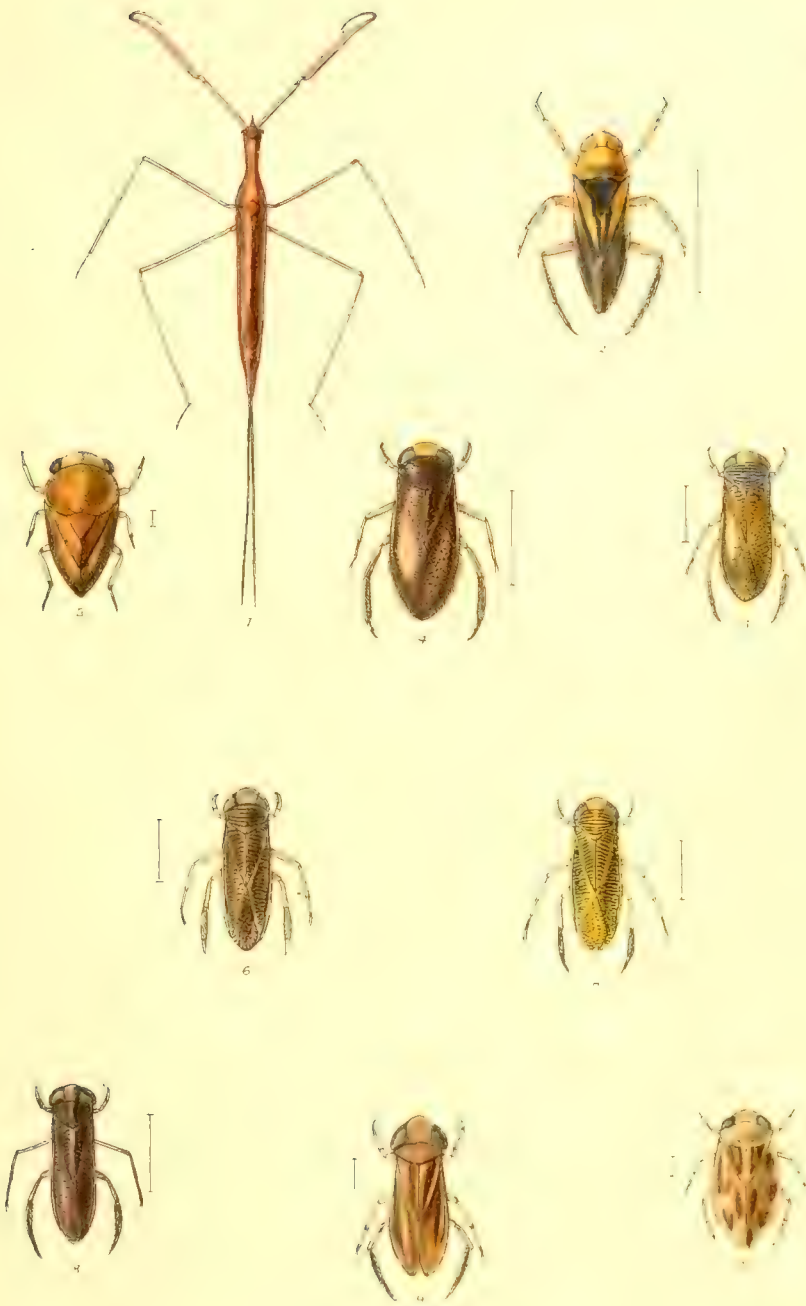


PLATE XXXI.

- FIG. 1. *Ranatra linearis*, *Linn.*
2. *Notonecta glauca*, *Linn.*
3. *Plea minutissima*, *Fab.*
4. *Corixa Geoffroyi*, *Leach*
5. „ *concinna*, *Fieb.*
6. „ *striata*, *Linn.*
7. „ *Fallenii*, *Fieb.*
8. „ *cavifrons*, *Thoms.*
9. „ *coleoptrata*, *Fab.*
10. *Sigara Scholtzii*, *Fieb.*



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PLATE XXXII.

- FIG. 1. Pronotum of *Corixa distincta*.
 2. ,, ,, Falleni.
 3. Face of *Corixa semistriata*, ♂.
 4. ,, ,, *limitata*, ♂.
 5. ,, ,, *Fabricii*, ♂.
 6. ,, ,, *venusta*, ♂.
 7. ,, ,, *fossarum*, ♂.
 8. Elytron of *Orthostira* (*Tingididæ*) (diagram).
 A. Sutural area; B. Discoidal ditto; C. Lateral ditto; D. Marginal ditto.
 9. Elytron of one of the *Capsidæ* (diagram). A. Clavus;
 B. Corium; C. Cuneus; D. Membrane; E, E. Cells of membrane.
 10. Elytron of one of the *Cimicidæ* (diagram).
 A. Clavus; B. Corium; C. Embolium; D. Cuneus; E. Membrane.
 11. Wing of a Capsid, showing hamus of cell at A.
 12. Upper side of one of the Pentatomidæ (diagram).
 A. Head; A¹. Central lobe of face; A². Antennæ; A³. Eyes (compound); A⁴. Ocelli. B. Pronotum;
 B¹. Anterior angles; B². Posterior ditto. C. Scutellum. D¹. Corium of Elytra; D². Clavus of ditto;
 D³. Membrane of ditto. E. Abdomen; E¹—E⁵. Segments of Connexivum. F¹, F², F³. Femora,
 Tibiæ, and Tarsi of legs.
 13. Underside of one of the Pentatomidæ (diagram).
 A. Head; A¹. Rostrum; A². Antennæ; A³. Eyes.
 B. Prosternum; B¹. Acetabulum; B². Coxæ;
 B³. Trochanter; B⁴. Femur; B⁵. Tibia; B⁶. Tarsi.
 C. Mesosternum, legs, &c., as prosternum.
 D. Metasternum, ,, ,, ,, ,,
 D¹. Orifice of odoriferous sac. E¹, E², &c. Abdominal segments, the black dots being the stigmata.
 E². Showing basal process, as in *Piezodorus*.
 E⁷, E⁸. First and second genital segments.

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